Visuality™ Model T7714
Mobile Video System

User Manual

IMPORTANT

The compliance information in this document is incomplete and subject to change.

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This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse or unauthorized modification. If the product fails to perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall Patton Electronics be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings and incidental or consequential damages arising from the use of or inability to use this product. Patton Electronics specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

Summary Table of Contents

1 General information 13
2 Application overview 18
3 T7714 installation 20
4 T7714 configuration 26
5 Contacting Patton for assistance 51
A Specifications 54
B Port pin-outs 58
C T7714 factory configuration 62

Table of Contents

Summary Table of Contents **3**
Table of Contents **4**
List of Figures **7**
List of Tables **8**
About this guide **9**
Audience 9
Structure 9
Precautions 10
Safety when working with electricity 11
General observations 12
Typographical conventions used in this document 12
General conventions 12
1 General information **13**
Model T7714 Overview 14
Features and Benefits 15
Rear and Front Panels 16
Model T7714 rear panel 16
Model T7714 front panel 16
LED Descriptions 17
2 Application overview **18**
Typical T7714 Application 19
3 T7714 installation **20**
Introduction 21
Connecting cables 22
Connecting the Ethernet ports 22
Connecting the Console port 22
Connecting Audio & Video 23
Connecting the PTZ Control 23
Connecting GPS & Cellular Antennas 23
Connecting USB components 23
Connecting the cellular modem 23
Connecting power 24
Main power 24
Auxiliary power and signal inputs 24
Docking the unit 24
Replacing/installing hard drives 25
4 T7714 configuration **26**
Introduction 28
Web Management Interface (WMI) 28

Setting Up Network Interfaces 28
Setting up the PPP interface 28
Enable the cellular modem 29
Create a PPP interface and bind to the cellular modem 30
Add the default route over PPP 31
Setting up the Ethernet interface 31
Configure the eth0 interface 31
Configure the DHCP server 32
Setting up firewall profiles 33
Configure the ingress firewall profile 33
Configure the egress firewall profile 35
Configuring the Video Registry 36
Management IP 36
SSL and X.509 Keys 36
SSL 36
X.509 37
Primary Command Server 37
Configuring Media Services 37
Media Channels 37
Media Files 40
Stored Video Settings 40
Stored Video 40
Configuring the GPS Controller 41
Configuring the PTZ Controller 41
Command Line Interface (CLI) 42
Setting Up Network Interfaces 42
Setting up the PPP interface 42
Enable the cellular modem 42
Create a PPP interface and bind to the cellular modem 43
Add the default route over PPP 43
Setting up the Ethernet interface 43
Configure the eth0 interface 43
Configure the DHCP server 44
Setting up firewall profiles 44
Configure the ingress firewall profile 44
Configure the egress firewall profile 44
Configuring the Video Registry 45
Configuring Media Services 45
Managing Media Channels 45
Configure mode 46
Channel mode 46
Stream mode 47
Capture mode 48
Show mode 49

Managing Media Files 50
Configuring the GPS Controller 50
Configuring the PTZ Controller 50

5 Contacting Patton for assistance 51
Introduction 52
Contact information 52
Patton support headquarters in the USA 52
Alternate Patton support for Europe, Middle East, and Africa (EMEA) 52
Warranty Service and Returned Merchandise Authorizations (RMAs) 52
Warranty coverage 52
Out-of-warranty service 53
Returns for credit 53
Return for credit policy 53
RMA numbers 53
Shipping instructions 53

A Specifications 54
Video Inputs 55
Audio Input 55
Audio Output 55
Video Ingest Resolution & Processing 55
Digital Video Recorder (DVR) 55
Streaming 55
Cellular/Wireless Uplink & GPS 55
Data Connections & Camera Control 56
Security and Encryption 56
Networking 56
Management 57
Dimensions 57
Weight 57
Power 57
Environment 57

B Port pin-outs 58
Introduction 59
Console port 59
Ethernet port 59
External SATA Connector 60
PTZ Connector 60
OBD II Connector 61
USB Type A Connector 61

C T7714 factory configuration 62
Introduction 63

List of Figures

1 Visuality™ Model T7714 14
2 T7714 rear panel 16
3 Model T7714 front panel 16
4 T7714 typical application 19
5 T7714 Connectors 21
6 Installing the cellular modem card on the T7714 23
7 T7714 power connectors 24
8 T7714 dock 24
9 T7714 hard drive locations 25
10 WMI - Cellular Modem Status 29
11 WMI - Activate Cellular Modem 29
12 WMI - Add PPP Interface 30
13 WMI - Configure PPP Interface 30
14 WMI - Add Default Route over PPP 31
15 WMI - Add IP Address 31
16 WMI - Configure eth0 interface 32
17 WMI - Add DHCP Server 32
18 WMI - DHCP Server - Add Router and DNS Server 32
19 WMI - Add Ingress Profile 33
20 WMI - Add Profile Rule 34
21 WMI - Bind Ingress Profile 34
22 WMI - Add Egress Profile 35
23 WMI - Bind Egress Profile 35
24 WMI - Set Management IP 36
25 WMI - Create SSL Key 36
26 WMI - X.509 Key 37
27 WMI - Assign Primary Command Server 37
28 WMI - Media Channels 38
29 WMI - Capture/Stream Settings 38
30 WMI - Stored Video Settings 40
31 WMI - Stored Video Files 40
32 WMI - T7714 GPS Controller 41
33 WMI - T7714 PTZ Controller 41
34 CLI - Show media channel configuration 49
35 CLI - Show media channel statistics 49
36 CLI - Show media display layout configuration 49
37 EIA-561 (RJ-45 8-pin) port 59
38 EIA-561 (DB-9) port 59
39 Ethernet port pin-out 59
40 SATA connector pin-out 60
41 PTZ Connector (DB-9) 60
42 OBD II Connector (DB-9) 61
43 USB Type A Connector 61

List of Tables

1 General conventions 12
2 LED Descriptions 17
3 publicin Profile Rule (T7714) 34
4 publicout Profile Rule (T7714) 35
5 Media Channel Capture/Stream Settings 39
6 CLI - Enable the cellular modem 42
7 CLI - Create PPP interface/bind to cellular modem 43
8 CLI - Add default route over PPP 43
9 CLI - Configure eth0 interface 43
10 CLI - Configure the DHCP server 44
11 CLI - Configure the ingress firewall profile 44
12 CLI - Configure the egress firewall profile 44
13 CLI - Configure the video registry 45
14 CLI - Configure media channels 45
15 CLI - T7714 Media Channels - Configuration Mode 46
16 CLI - T7714 Media Channels - Channel Mode 46
17 CLI - T7714 Media Channels - Stream Mode 47
18 CLI - T7714 Media Channels - Capture Mode 48
19 CLI - T7714 Media Channels - Show Mode 49
20 CLI - Configure media file settings 50
21 CLI - Configure the GPS controller 50
22 CLI - Configure the PTZ controller 50

About this guide

This guide describes the Visuality™ T7714 hardware, installation and basic configuration.

Audience

This guide is intended for the following users:

- Operators
- Installers
- Maintenance technicians

Structure

This guide contains the following chapters and appendices:

- Chapter 1 on page 13 provides information about T7714 features and capabilities
- Chapter 2 on page 18 contains an overview describing T7714 applications
- Chapter 3 on page 20 provides hardware installation procedures
- Chapter 4 on page 26 provides quick-start procedures for configuring the T7714
- Chapter 5 on page 51 contains information on contacting Patton technical support for assistance
- Appendix A on page 54 contains specifications for the T7714
- Appendix B on page 58 describes the T7714's ports and pin-outs
- Appendix C on page 62 provides the factory configuration for the T7714

For best results, read the contents of this guide *before* you install the unit.

Precautions

Notes, cautions, and warnings, which have the following meanings, are used throughout this guide to help you become aware of potential problems. ***Warnings*** are intended to prevent safety hazards that could result in personal injury. ***Cautions*** are intended to prevent situations that could result in property damage or impaired functioning.

Note A note presents additional information or interesting sidelights.

The alert symbol and IMPORTANT heading calls attention to important information.

The alert symbol and CAUTION heading indicate a potential hazard. Strictly follow the instructions to avoid property damage.

The shock hazard symbol and CAUTION heading indicate a potential electric shock hazard. Strictly follow the instructions to avoid property damage caused by electric shock.

The alert symbol and WARNING heading indicate a potential safety hazard. Strictly follow the warning instructions to avoid personal injury.

The shock hazard symbol and WARNING heading indicate a potential electric shock hazard. Strictly follow the warning instructions to avoid injury caused by electric shock.

Safety when working with electricity

The T7714 contains no user serviceable parts. The equipment shall be returned to Patton Electronics for repairs, or repaired by qualified service personnel.

Mains Voltage: Line voltages are present when the power cord is connected. The mains outlet shall be within 10 feet (3 meters) of the device, shall be easily accessible, and protected by a circuit breaker.

For AC powered units, ensure that the power cable used meets all applicable standards for the country in which it is to be installed, and that it is connected to a wall outlet which has earth ground.

For units with an external power adapter, the adapter shall be a listed Limited Power Source.

Hazardous network voltages are present in WAN ports regardless of whether power to the unit is ON or OFF. To avoid electric shock, use caution when near WAN ports. When detaching cables, detach the end away from the unit first.

Do not work on the system or connect or disconnect cables during periods of lightning activity.

In accordance with the requirements of council directive 2002/96/EC on Waste of Electrical and Electronic Equipment (WEEE), ensure that at end-of-life you separate this product from other waste and scrap and deliver to the WEEE collection system in your country for recycling.

General observations

- Clean the case with a soft slightly moist anti-static cloth
- Place the unit on a flat surface and ensure free air circulation
- Avoid exposing the unit to direct sunlight and other heat sources
- Protect the unit from moisture, vapors, and corrosive liquids

Typographical conventions used in this document

This section describes the typographical conventions and terms used in this guide.

General conventions

The procedures described in this manual use the following text conventions:

Table 1. General conventions

Convention	Meaning
Garamond blue type	Indicates a cross-reference hyperlink that points to a figure, graphic, table, or section heading. Clicking on the hyperlink jumps you to the reference. When you have finished reviewing the reference, click on the **Go to Previous View** button in the Adobe® Acrobat® Reader toolbar to return to your starting point.
Futura bold type	Commands and keywords are in **boldface** font.
Futura bold-italic type	Parts of commands, which are related to elements already named by the user, are in ***boldface italic*** font.
Italicized Futura type	Variables for which you supply values are in *italic* font
Futura type	Indicates the names of fields or windows.
Garamond bold type	Indicates the names of command buttons that execute an action.
< >	Angle brackets indicate function and keyboard keys, such as <SHIFT>, <CTRL>, <C>, and so on.
[ ]	Elements in square brackets are optional.
{a | b | c}	Alternative but required keywords are grouped in braces ({ }) and are separated by vertical bars (|)
`screen`	Terminal sessions and information the system displays are in `screen font`.
#	An hash sign at the beginning of a line indicates a comment line.

Chapter 1 General information

Chapter contents

Model T7714 Overview 14
Features and Benefits 15
Rear and Front Panels 16
- Model T7714 rear panel 16
- Model T7714 front panel 16
- LED Descriptions 17

Model T7714 Overview

The Patton Visuality™ Model T7714 Series Secure Store-and-Stream Media Appliances offers a complete mobile and fixed remote surveillance solution. The Model T7714 Series is specifically for applications requiring local capture, storage, and simultaneous streaming of all video sources.

Ideal for public safety, transportation, industrial and government monitoring and surveillance requirements, the T7714 supports full-resolution quality on all inputs. Along with local audio input and user I/O, the T7714 provides GPS location information with real-time and synchronized geospatial capabilities.

Wired or wireless uplink options permit easy streaming of all channels over virtually any cellular provider network while permitting over-the-air recall of any DVR recording. Now mobile systems can deliver live motion video in real-time for the ultimate in remote command and control.

Incorporating Patton's TrinityAE™ software service set, the Visuality™ solution provides standards based IP multi-service transport and interfacing with coordinated remote communications. The T7714 also adds system-wide network security and encryption options with secure end-to-end communications and multi-unit management.

When used with the Visuality™ T7910 Secure Command and Control Server an operator can ensure total and secure control of all remote units from a single point of management. Providing tunnel termination, user credentials, and complete remote unit control, the T7910 manages the simultaneous recording and re-streaming playout of up to 24 unique sources.

CAN bus & PTZ
Power, I/O & network connections
Integrated GPS & cellular diversity antennas
4 full-rate composite video & 4 full-rate mono audio inputs
T7714
DOCKMATE Station

Figure 1. Visuality™ Model T7714

Features and Benefits

The Visuality™ Model T7714 Multichannel Store and Stream DVR provides a complete and secure video, audio, and GPS surveillance solution with integrated capture, DVR storage, and streaming.

- **Full Definition (704x480) and Full Frame Rate (30 fps) on All Inputs**—Records video at D1 (704x480) size, 30 frames-per-second (fps) while simultaneously streaming at SIF (352x240) size, 15 fps. When recording is disabled, video content can be streamed at a max resolution of D1 (704x480) size, 25 fps.
- **Flexible Video Recoding Rates**—H.264 encoder supports D1, VGA, SIF, QVGA, QSIF, & QQVGA video resolutions at 5~30 fps.
- **Real-Time Location & Tracking with Integrated GPS**—Acquires, records, and transports NMEA 0183 GPS location sentences both locally and via streaming. All video is time-correlated and aligned to GPS time.
- **Vehicular, Mobile or Fixed Operation**—Use in mobile applications and stream content in real-time, or configure for fixed surveillance and monitoring applications.
- **Standard Protocols**—Supports a range of cellular technologies: 1xRTT, EVDO Rev. 0 and Rev. A, HSPA using internal PCI Express form factor aircard modems.
- **Field-Swappable Hard Drive Media**—Locked drive bay for locally stored high resolution video can easily be removed and viewed, copied, or archived. Integrates with Patton's Visuality™ T7900 Series Head-End Content, Control and Management System—Secure data tunnel termination from remote DVRs, content file indexing & local archiving, stream playout & re-streaming/broadcasting.

Rear and Front Panels

Model T7714 rear panel

The Model T7714 rear panel ports are described in Figure 2.

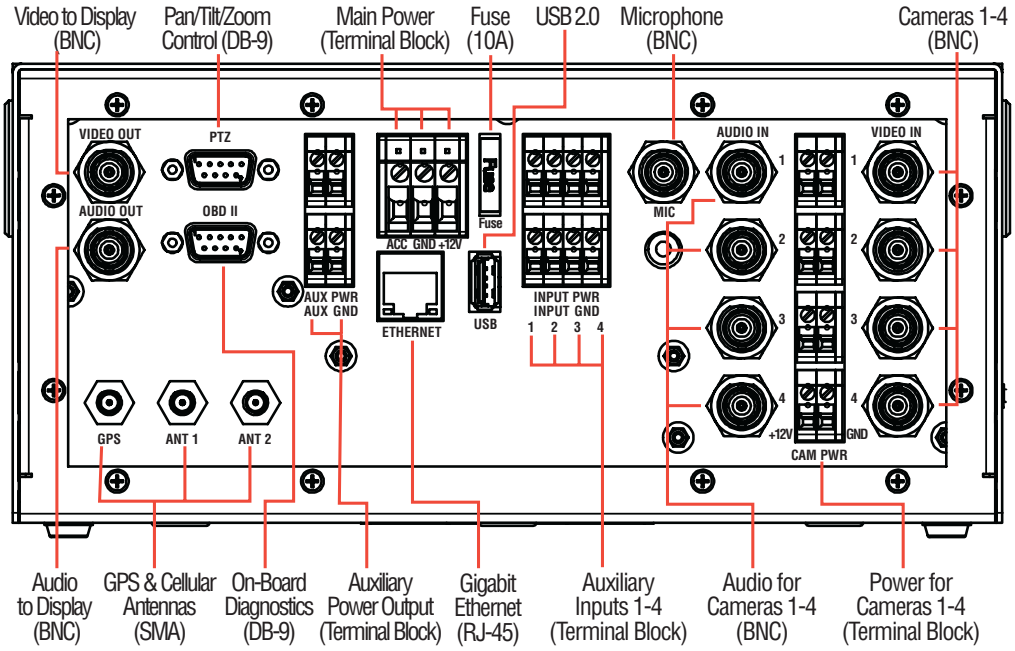


Figure 2. T7714 rear panel

Model T7714 front panel

Figure 3 shows the Model T7714 front panel. The LED definitions are listed in Table 2 on page 17.

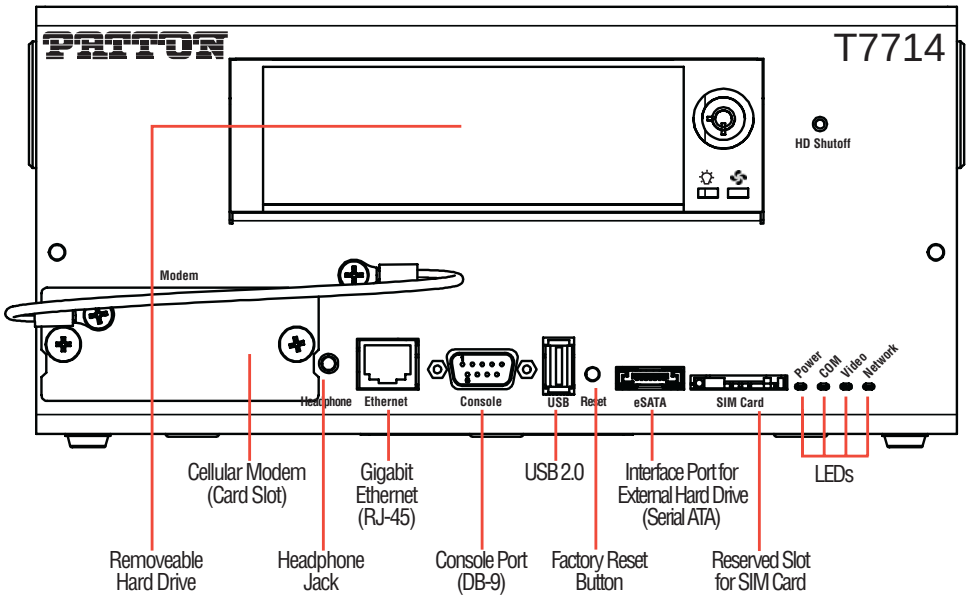


Figure 3. Model T7714 front panel

LED Descriptions

Table 2. LED Descriptions

LED	Description
Power	On = Unit has power; Off = Unit does not have power
COM	On = Unit is connected to the T7900 command server Off = Uni is not connected to the T7900 command server
Video	On = The disk is recording video or sending video to the command server Off = The disk is not recording or transmitting video files
Network	On (Solid) = The modem has 100% signal strength Five flashes/pause = 90% signal strength Four flashes/pause = 70% signal strength Three flashes/pause = 50% signal strength Two flashes/pause = 30% signal strength One flash/pause = 10% signal strength Off = The modem is shutdown or has no signal

Chapter 2 Application overview

Chapter contents

Typical T7714 Application 19

Typical T7714 Application

The Visuality T7714 Series functions as an intelligent networked media aggregator and provides the simultaneous recording and streaming playout of up to four video sources with full resolution on all channels. Including coordinated GPS location data, all data and information is provided over a secure end-to-end tunnel with user defined encryption options.

Uplink options include integrated cellular wireless support for 1xRTT, EVDO Rev. 0 and Rev. A, and HSPA using internal PCI Express form factor aircard modems. Or use the Integrated Ethernet port for connection and transport over any public or private IP network or even the Internet.

For end-to-end management and control the Visuality Model T7910 offers a secure headend command server permitting security, control, configuration, and location management for up to 24 remote T7714 streams.

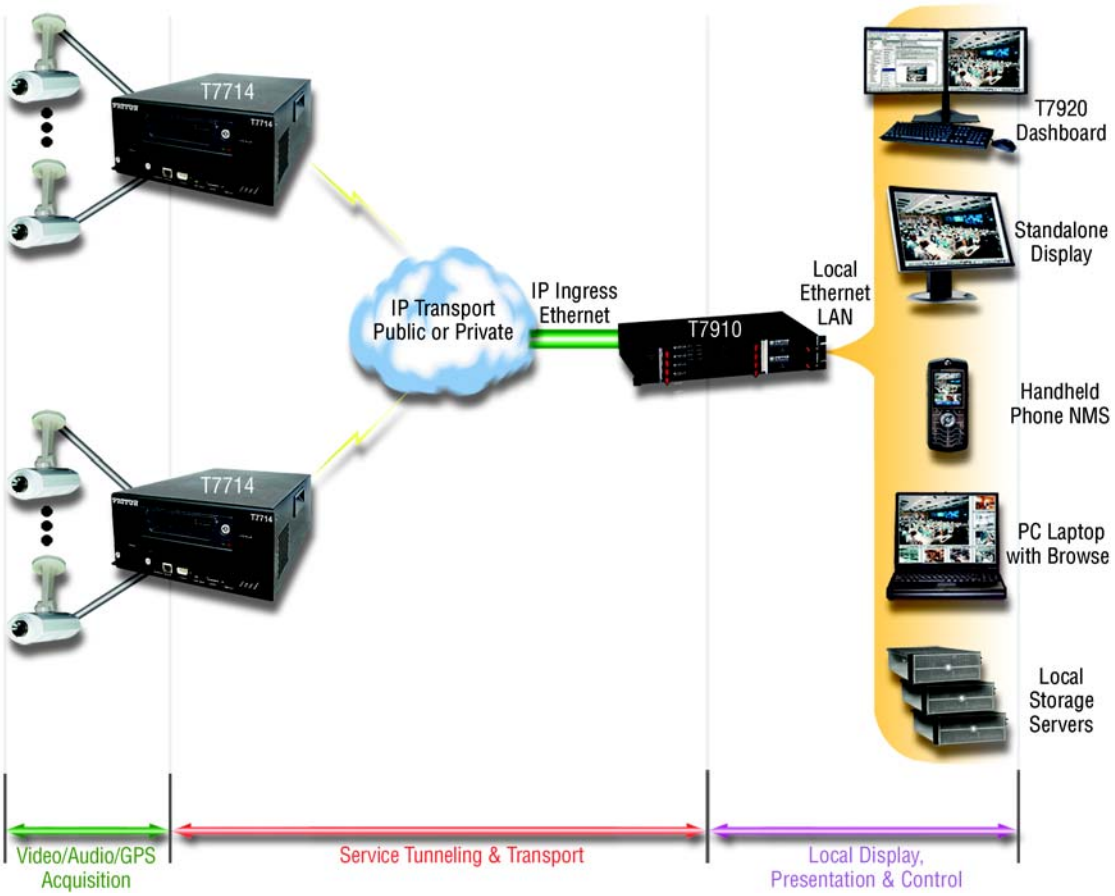


Figure 4. T7714 typical application

Chapter 3 T7714 installation

Chapter contents

Introduction 21
Connecting cables 22
- Connecting the Ethernet ports 22
- Connecting the Console port 22
- Connecting Audio & Video 23
- Connecting the PTZ Control 23
- Connecting GPS & Cellular Antennas 23
- Connecting USB components 23

Connecting the cellular modem 23
Connecting power 24
- Main power 24
- Auxiliary power and signal inputs 24

Docking the unit 24
Replacing/installing hard drives 25

Introduction

This section describes basic procedures for setting up the T7714 model. The T7714 Mobile Video System model can be used as a standalone surveillance unit or swapped out of a dock installed in a vehicle. There are two options for the T7714– the standalone model and the dockable model. The dock is the only difference between installing the two models. See the section "Docking the unit" on page 24 for more details on installing the dockable model. Figure 5 illustrates the front and rear panel connectors for the T7714.

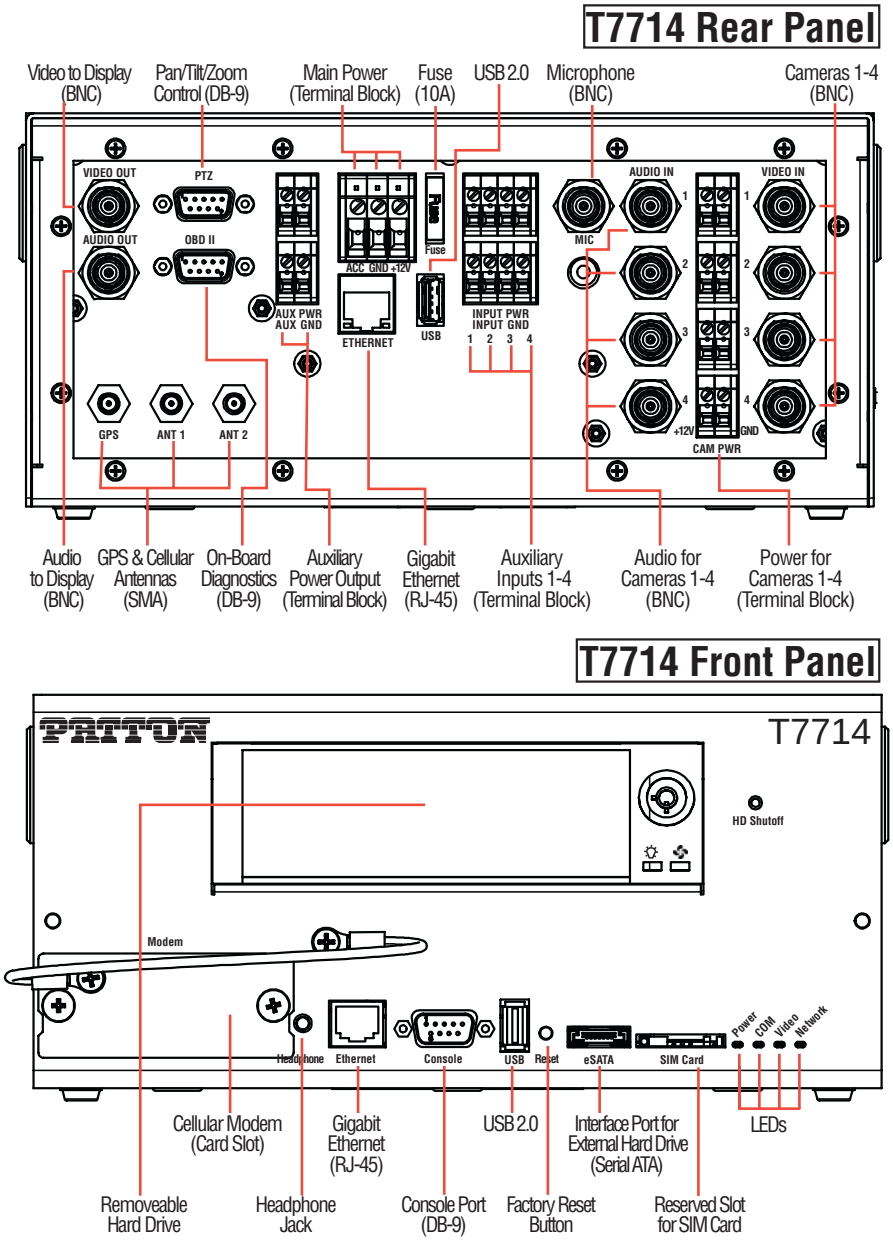


Figure 5. T7714 Connectors

Use these steps to install the T7714:

- "Connecting cables" on page 22
- "Connecting the cellular modem" on page 23
- "Connecting power" on page 24
- "Docking the unit" on page 24 (for dockable units)
- "Replacing/installing hard drives" on page 25

Connecting cables

The T7714 has several different options to connect components. Power and Cameras must be installed for the T7714 to work successfully for basic applications. See Figure 5 on page 21 for a diagram of the connectors on the T7714 unit. Refer to the following sections for connecting cables:

- "Connecting the Ethernet ports" on page 22
- "Connecting the Console port" on page 22
- "Connecting Audio & Video" on page 23
- "Connecting the PTZ Control" on page 23
- "Connecting GPS & Cellular Antennas" on page 23
- "Connecting USB components" on page 23

See Appendix B, "Port pin-outs" on page 58 for pin-out diagrams of all the connectors included on the T7714.

Connecting the Ethernet ports

Note A T7714 unit typically operates in a vehicle where Ethernet cables are not required. You may want to connect an Ethernet port to configure the T7714 or offload files.

The T7714 model has two Gigabit Ethernet ports– one on the front panel and one on the rear panel. The Ethernet ports will auto-sense the correct speed of the local LAN and automatically negotiate to half- or full-duplex operation. Use a straight-through or cross-over Ethernet cable to connect the Ethernet RJ-45 jack to the local LAN. You may use the Ethernet ports on the T7714 to connect the following components:

- Laptop to configure the T7714 and/or offload files stored on the unit

- T7712 for additional video inputs

- Wireless Access Point

- Airlink external cellular modem

- BGAN satellite terminal

Connecting the Console port

The T7714 provides an RS-232 interface on a DB-9 connector for system management. Use a serial cable to connect the DB-9 connector on the T7714 to an open serial port on a PC.

Connecting Audio & Video

The T7714 provides four composite video connections and four corresponding audio connections using 75-ohm BNC connectors. Terminal block connectors provide power terminals for each of the four cameras.

For each camera, connect the wire for power into the left slot on the terminal block connector for the corresponding camera. Connect the wire for ground on the right slot on the terminal block connector for each correesponding camera.

Use a 75-ohm BNC cable to connect the video and audio ports. Plug the male end of the BNC cable into the T7714 VIDEO IN or AUDIO IN female connector. Plug the other end of the BNC cable into the corresponding port on the camera.

Connecting the PTZ Control

The PTZ uses a DB-9 connector on the T7714. The PTZ interface allows you to connect Pan/Tilt/Zoom controls for a camera. Refer to Appendix B, "Port pin-outs" on page 58 for pin-outs of the PTZ connector.

Connecting GPS & Cellular Antennas

The T7714 provides three antenna connectors – one for a GPS antenna, one for a cellular antenna, and one connector is reserved for future use. Use a SMA cable to connect the female SMA antenna ports.

Connecting USB components

The T7714 provides two USB 2.0 ports– one on the front panel and one on the rear panel. You can use the USB ports to connect a thumb drive to transfer files stored on the T7714.

Connecting the cellular modem

The T7714 provides a slot for a cellular modem card. To install a cellular modem in the T7714:

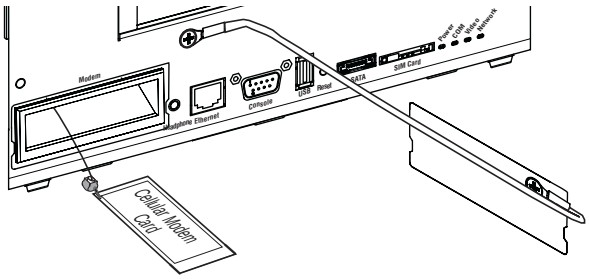


Figure 6. Installing the cellular modem card on the T7714

1. Use a screwdriver to remove the **Modem** cover on the front of the T7714 unit.
2. Plug the cellular modem card into the antenna cable inside of the unit.
3. Slide the modem card into the tray inside the T7714 until the card clicks into place.
4. Use a screwdriver to reattach the **Modem** cover to the front of the T7714 unit.

To remove the cellular modem card, use a screwdriver to remove the **Modem** cover on the front of the T7714 unit. Gently press on the modem card. The card will eject from the card slot.

Connecting power

The T7714 unit provides terminal block connectors to connect the main power, and also to connect auxiliary power and inputs for extra peripherals. All power inputs are located on the rear panel of the T7714.

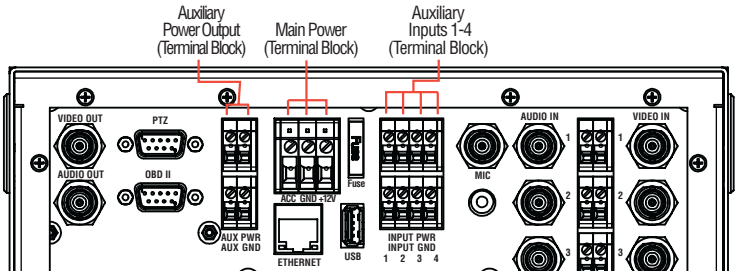


Figure 7. T7714 power connectors

Main power

To connect the main power, connect the wires for the power connector into the terminal block labeled **ACC GND +12V**. Connect the wire for the vehicle accessory port into the **ACC** block. Connect the wires for the vehicle battery into the **GND** and **+12V** blocks. The unit will turn on when you connect the **ACC** wire to the vehicle accessory line. You may verify that the **Power** LED on the front panel of the T7714 is lit.

Auxiliary power and signal inputs

The T7714 provides two auxiliary power outputs for powering extra peripherals in a vehicle. Connect the wire for power into the top **AUX PWR** block, and plug the wire for ground into the bottom **AUX GND** block. Each auxiliary power output provides 12VDC power at 1A each. The auxiliary power turns on and off with the unit.

The T7714 provides four auxiliary input blocks for connecting other vehicle components, such as emergency lights. Each auxiliary input block can withstand 12VDC signals. For each component, connect the wire for power into the top **INPUT PWR** block, and plug the wire for ground into the bottom **INPUT GND** block.

Docking the unit

Some models of the T7714 are made to fit into a dock in a vehicle designed especially for Visuality models. The dock allows you to easily swap remote T7714 units in and out of vehicles. Components for dockable T7714 units are the same as standalone units. To install a dockable T7714 unit into a dock in a vehicle, line up the T7714 unit with the metal guides on the dock. Push the T7714 unit straight back to connect it with the dock. The DB-15 connector installs the GPS and cellular antennas. The DB-78 connector installs the power, video, audio, and other components.

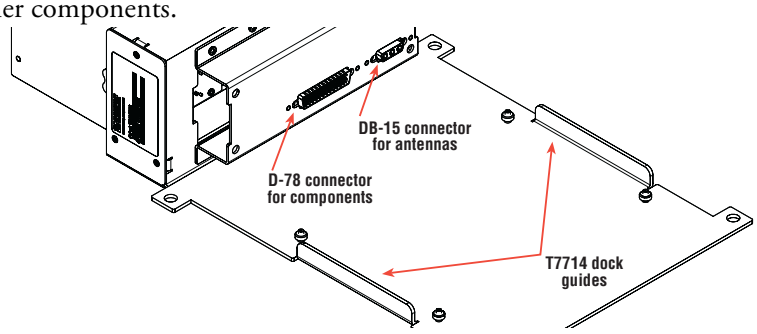


Figure 8. T7714 dock

Replacing/installing hard drives

The T7714 unit includes a removable, lockable internal hard drive for file storage. The hard drive bay is located on the front panel of the T7714. The T7714 also includes an eSATA slot on the front panel for connecting an external hard drive for additional file storage.

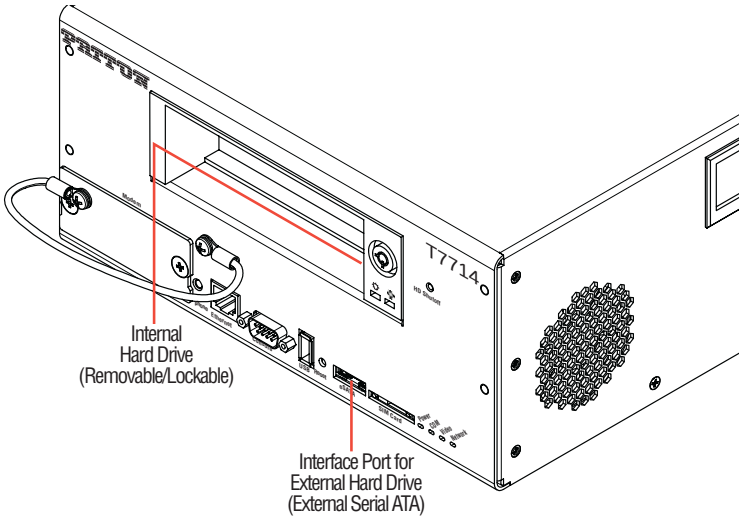


Figure 9. T7714 hard drive locations

To remove the internal hard drive, use the key supplied with the unit to unlock the hard drive bay on the front of the T7714. Push the **HD Shutoff** button next to the drive bay so that the T7714 will stop powering the drive. Lift the handle of the drive bay and pull the hard drive out of the unit.

To install an external hard drive, tconnect an SATA interface cable to the external hard drive. Then, connect the other end of the cable to the eSATA interface port on the front panel of the T7714.

Chapter 4 T7714 configuration

Chapter contents

Introduction 28
Web Management Interface (WMI) 28
Setting Up Network Interfaces 28
Setting up the PPP interface 28
Enable the cellular modem 29
Create a PPP interface and bind to the cellular modem 30
Add the default route over PPP 31
Setting up the Ethernet interface 31
Configure the eth0 interface 31
Configure the DHCP server 32
Setting up firewall profiles 33
Configure the ingress firewall profile 33
Configure the egress firewall profile 35
Configuring the Video Registry 36
Management IP 36
SSL and X.509 Keys 36
SSL 36
X.509 37
Primary Command Server 37
Configuring Media Services 37
Media Channels 37
Media Files 40
Stored Video Settings 40
Stored Video 40
Configuring the GPS Controller 41
Configuring the PTZ Controller 41
Command Line Interface (CLI) 42
Setting Up Network Interfaces 42
Setting up the PPP interface 42
Enable the cellular modem 42
Create a PPP interface and bind to the cellular modem 43
Add the default route over PPP 43
Setting up the Ethernet interface 43
Configure the eth0 interface 43
Configure the DHCP server 44
Setting up firewall profiles 44
Configure the ingress firewall profile 44
Configure the egress firewall profile 44
Configuring the Video Registry 45

Configuring Media Services 45
Managing Media Channels 45
Configure mode 46
Channel mode 46
Stream mode 47
Capture mode 48
Show mode 49
Managing Media Files 50
Configuring the GPS Controller 50
Configuring the PTZ Controller 50

Introduction

This chapter describes how to set up the system and configure media features. All models of the Visuality™ MVAS run on the Patton TrinityAE operating system. TrinityAE is a Patton-developed operating system and management plane based on the Linux Kernel and several other open-source software packages. All units may be fully managed and configured via the Command Line Interface or Web Management Interface.

This chapter does not describe features that are common for all models using the Trinity system. For details on setting up interface, routing, and traffic management features, refer to the *TrinityAE Administrator's Reference Guide*, available online at **www.patton.com/manuals/Trinity-arg.pdf**.

To configure the T7714 through the WMI, see the section "Web Management Interface (WMI)" on page 28.

To configure the T7714 through the CLI, see the section "Command Line Interface (CLI)" on page 42.

Web Management Interface (WMI)

This section describes how to configure basic features for T7714 remote units, such as system settings, the video registry, GPS, and media services, through the WMI. To access the T7714 management page, type the IP address into a web browser and log in.

Refer to the following sections for setting up a T7714 unit for typical deployment using the WMI:

- "Setting Up Network Interfaces" on page 28
- "Configuring the Video Registry" on page 36
- "Configuring Media Services" on page 37
- "Configuring the GPS Controller" on page 41
- "Configuring the PTZ Controller" on page 41

Setting Up Network Interfaces

In order for the T7714 unit to operate correctly, you must configure the PPP interface (see "Setting up the PPP interface" on page 28) and an Ethernet interface (see "Setting up the Ethernet interface" on page 31).

Setting up the PPP interface

In a typical deployment, The T7714 is configured to use an internal cellular modem card to connect to the cellular network for Internet connectivity. Cellular modems establish an outgoing public connection to the cellular network using PPP. Complete these steps to set up a network interface for PPP:

1. "Enable the cellular modem"
2. "Create a PPP interface and bind to the cellular modem"
3. "Add the default route over PPP"

Enable the cellular modem. Click on **Interface Configuration -> Cellular Modem** in the main navigation menu. The **Cellular Modem Status** page displays (Figure 10). The **Status** tab shows a summary of information about the celluar modem connected to the T7714.

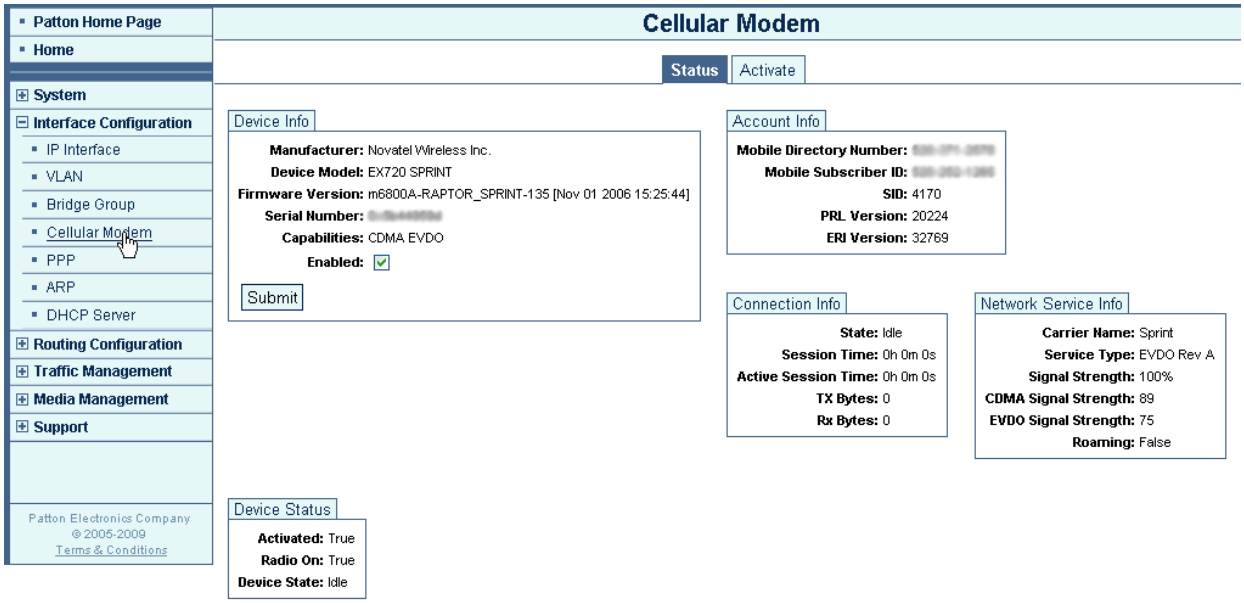


Figure 10. WMI - Cellular Modem Status

If you have just installed a new cellular modem (Chapter 2, "Installing the Hardware" on page 26), you will need to activate it. Click on the **Activate** tab on the Cellular Modem page (Figure 11).

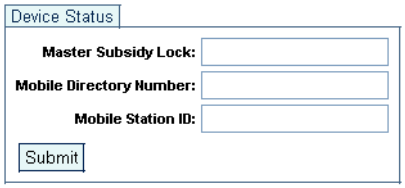


Figure 11. WMI - Activate Cellular Modem

To activate the cellular modem, you will need the **Master Subsidy Lock**. You can call your carrier to obtain the **MSL** code. Enter the ten-digit phone number of the device in the **Mobile Directory Number** field. Enter the ten-digit device identification code in the **Mobile Station ID** field. The **Mobile Station ID** number is usually the same as the **Mobile Directory Number**. Call your carrier if you need assistance with the **Mobile Station ID**. Click **Submit** to activate the cellular modem.

To enable/disable the cellular modem, check/uncheck the box in the **Device Info** section of the **Cellular Modem Status** page, and click **Submit** for your changes to take effect.

Create a PPP interface and bind to the cellular modem. To create a PPP interface using the WMI:

1. Click on **Interface Configuration -> PPP** in the main navigation menu. The **PPP Interface Configuration** page displays.

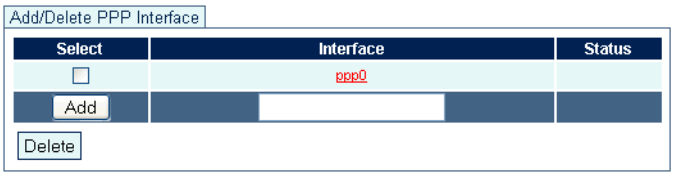


Figure 12. WMI - Add PPP Interface

2. In the **Add/Delete PPP Interface** section (Figure 12), enter **0** in the **Interface** field, and click **Add**. The page refreshes and the new PPP interface displays in the table.
3. Click on the hyperlink for the new **ppp0** interface. The interface configuration page displays.

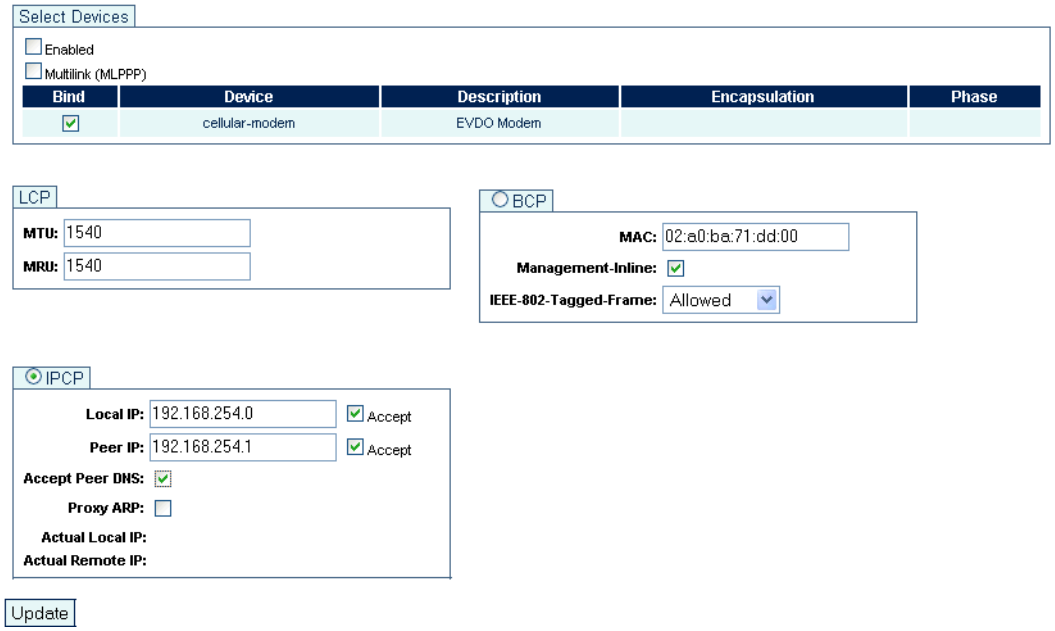


Figure 13. WMI - Configure PPP Interface

4. In the **Select Devices** section, check the box in the **Bind** column to attach the PPP interface to the cellular modem.
5. Select the radio button for **IPCP**. Check the boxes to **Accept** the **Local IP** and the **Peer IP**. Check the box to **Accept Peer DNS**.
6. Click **Update** to save the configuration.

Add the default route over PPP. To create a new default route in the WMI:

1. Click on **Routing Management -> Static Route** in the main navigation menu. The **Static Route** page displays.

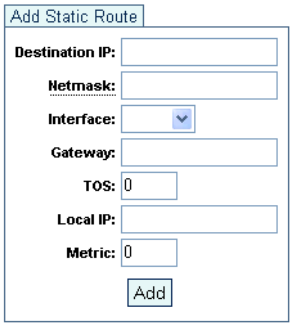


Figure 14. WMI - Add Default Route over PPP

2. Enter *0.0.0.0* for the **Destination IP**, and also for the **Netmask**.
3. Select **ipcp0** from the **Interface** drop-down menu.
4. Enter *0* as the value for **TOS** and **Metric**. Click **Add**.

The new route displays in the **Routing Table** on the Static Route page.

Setting up the Ethernet interface

The T7714 has two physical Ethernet interfaces. You can configure these interfaces to have IP addresses and bind them to a DHCP server to facilitate local access for maintenance and management.

Configure the eth0 interface. To add the "eth0" interface in the WMI:

1. Click on **Interface Configuration -> IP Interface** in the main navigation menu. The **IP Address Configuration** page displays.

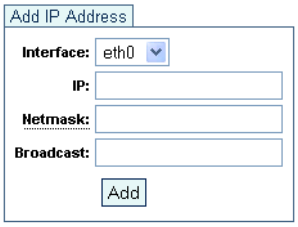


Figure 15. WMI - Add IP Address

2. In the **Add IP** section, select **eth0** from the **Interface** drop-down menu.
3. Enter *192.168.200.10* as the **IP** address. Enter *255.255.255.0* as the **Netmask**. Enter *0.0.0.0* as the **Broadcast** address.
4. Click **Add**. The interface with the new IP address displays in the **IP Configuration** table on the IP Interface page.

To configure the "eth0" interface:

1. Click on **System -> Interface** in the main navigation menu. The **Interface Status** page displays.
2. Click on the hyperlink for the **eth0** interface in the Interface column of the Status table. The **eth0 Interface Configuration** page displays.

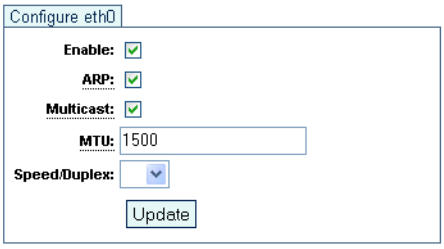


Figure 16. WMI - Configure eth0 interface

3. Confirm that the **Enable**, **ARP**, and **Multicast** boxes are checked. Set the **MTU** to 1500. Click **Update**.

Configure the DHCP server. To set up the DHCP Server:

1. Click on **Interface Configuration -> DHCP Server** in the main navigation menu. The **DHCP Server Configuration** page displays.

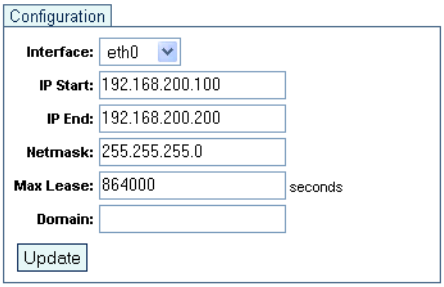


Figure 17. WMI - Add DHCP Server

2. In the **Configuration** section (Figure 17), enter the following details. Select **eth0** from the Interface drop-down menu. Enter *192.168.200.100* for **IP Start** and *192.168.200.200* for **IP End**. Enter *255.255.255.0* as the **Netmask**. Enter *864000* as the **Max Lease**. Click **Update** to save the configuration.
3. In the **Routers** section (Figure 18), enter *192.168.200.10* in the field and click **Add**.

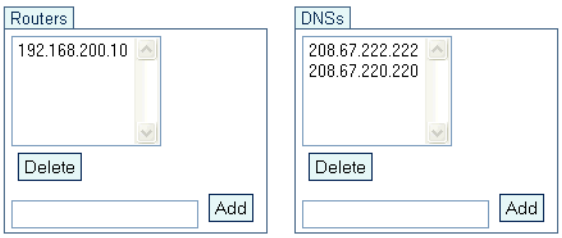


Figure 18. WMI - DHCP Server - Add Router and DNS Server

4. In the **DNS** section (Figure 18), enter *208.67.222.222* in the field and click **Add**. Then, enter *208.67.220.220* in the field and click **Add**.

Setting up firewall profiles

You will need two access control/firewall profiles on the public PPP interface for secure network operation. The first profile provides firewall protection on the ingress direction. The T7714 operates in client mode; therefore, all connections are initiated from the T7714 towards the T7900. Firewall rules reject all connections from the outside to the T7714, with the exception of connections that are part of any communication initiated by the unit. .

The second firewall profile is bound in the egress direction on the PPP interface and protects media content traffic from leaking to the Internet before the secure tunnel is established between the T7714 and T7900.

In most cases, these firewall profiles do not have to be modified. Additional ports in the ingress direction can be opened up for SSH or Web connections if remote access is required.

Configure the ingress firewall profile. To create the *publicin* profile:

1. Click on **Traffic Management -> Firewall** in the main navigation menu. The **Access Control Profiles** page displays.

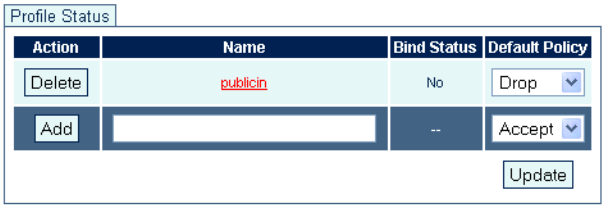


Figure 19. WMI - Add Ingress Profile

2. In the **Profile Status** section (Figure 19), enter *publicin* in the **Name** field. Select **Drop** from the **Default Policy** drop-down menu, and click **Add**. The *publicin* profile will display in the Profile Status table.
3. Click on the *publicin* hyperlink to access the profile's configuration page.
4. Use the **Add Profile Rule** section (Figure 20 on page 34) of the profile's configuration page to define specifications for the profile. Add the rule shown in Table 3 on page 34 to the *publicin* profile. Check the **In Use** box for the rule. Click **Add** after defining the rule to add it to the profile's rule list.

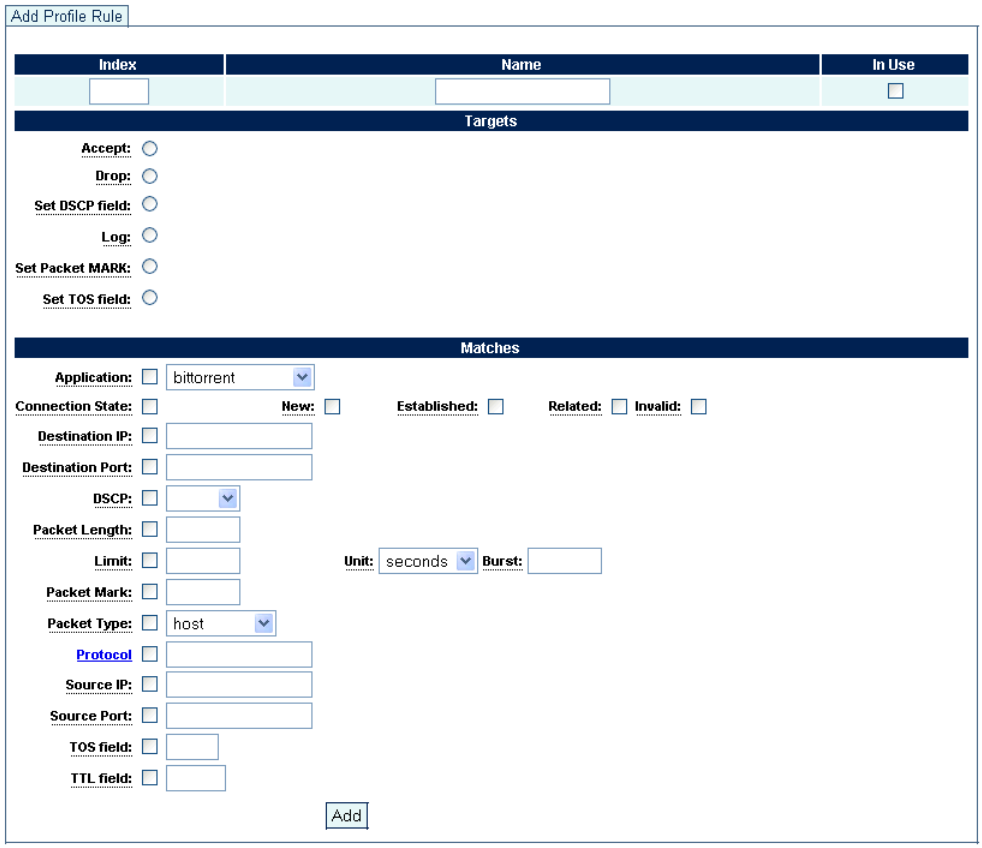


Figure 20. WMI - Add Profile Rule

Table 3. *publicin* Profile Rule (T7714)

Index	Name	Target	Matches
1	*allow*	ACCEPT	Check boxes for: **Connection State** / **Established** / **Related**

5. Click on the **Access Control Profiles** tab. In the **Profile Bindings** section (Figure 21), select *publicin* as the **Profile**. Select *ipcp0* as the **Interface**. Select *global-ingress* as the **Direction**. Click **Bind** in the Action column.

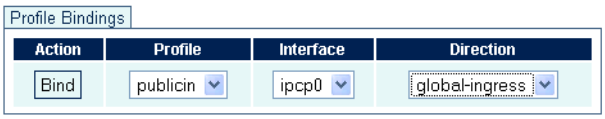


Figure 21. WMI - Bind Ingress Profile

Configure the egress firewall profile. To create the *publicout* profile:

1. Click on **Traffic Management -> Firewall** in the main navigation menu. The **Access Control Profiles** page displays.

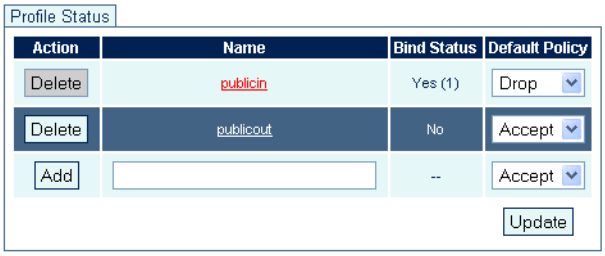


Figure 22. WMI - Add Egress Profile

2. In the **Profile Status** section (Figure 22), enter *publicout* in the **Name** field. Select **Accept** from the **Default Policy** drop-down menu, and click **Add**. The *publicout* profile will display in the Profile Status table.
3. Click on the *publicout* hyperlink to access the profile's configuration page.
4. Use the **Add Profile Rule** section (Figure 20 on page 34) of the profile's configuration page to define specifications for the profile. Add the rule shown in table 4 to the *publicout* profile. Check the **In Use** box for the rule. Click **Add** after defining the rule to add it to the profile's rule list.

Table 4. *publicout* Profile Rule (T7714)

Index	Name	Target	Matches
1	*video*	DROP	Select and enter information for: **Source IP:** *192.0.2.16/30*

5. Click on the **Access Control Profiles** tab. In the **Profile Bindings** section (Figure 23), select *publicout* as the **Profile**. Select *ipcp0* as the **Interface**. Select *global-egress* as the **Direction**. Click **Bind** in the Action column.

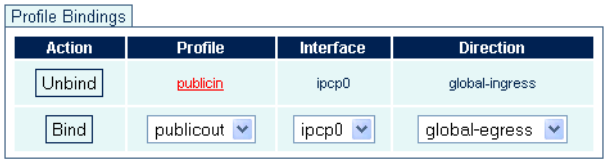


Figure 23. WMI - Bind Egress Profile

Configuring the Video Registry

Configuring the video-registry on a T7714 involves steps similar to configuring the T7900 as a secondary server. The MVAS assigns a unique management IP in the *172.16.1.0/24* subnet to the T7714 unit. The system creates and configures a SSL key for use with the video-registry system. The T7714 is then configured with the IP address of the primary T7900.

Complete the following steps to set up the video registry:

1. Assign a management IP address to the 771x unit. (See "Management IP" on page 36).
2. Configure the X.509 certificate and SSL key. (See "SSL and X.509 Keys" on page 36).
3. Set a T7900 as the primary command server or secondary server. (See "Primary Command Server" on page 37).

Management IP

For typical deployment, it is customary to put the primary T7900 at address *172.16.1.1*. To set up the management IP address for the primary T7900 command server:

1. Click on **Media Management -> Management IP** in the main navigation menu. The **Management IP** page displays.

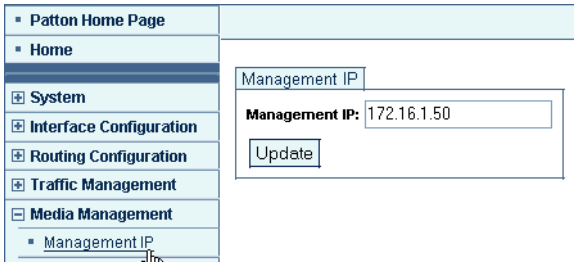


Figure 24. WMI - Set Management IP

2. Enter *172.16.1.50* in the **Management IP** field. Click **Update**.

SSL and X.509 Keys

SSL. To create a SSL key:

1. Click on **System -> SSL** in the main navigation menu. The **SSL Key Management** page displays.

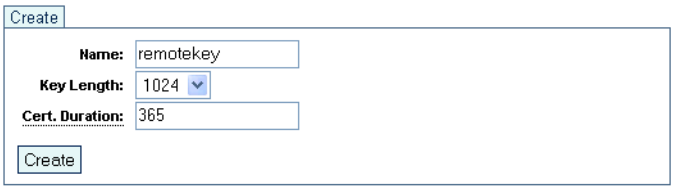


Figure 25. WMI - Create SSL Key

2. In the **Create** section (Figure 25), enter a unique text string in the **Name** field. Select **1024** as the **Key Length**. Enter the number of days in the **Cert Duration** field for how long the certificate will be valid. Click **Create**.

X.509. To select the X.509 key:

1. Click on **Media Management -> X.509 Key** in the main navigation menu. The **X.509 Key Configuration** page displays.

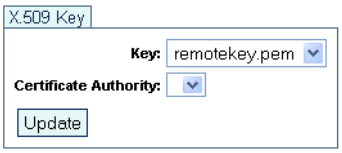


Figure 26. WMI - X.509 Key

2. Select the SSL key from the **Key** drop-down menu. Click **Update**.

Primary Command Server

To assign the T7714 unit to the primary command server:

1. Click on **Media Management -> Primary Command Server** in the main navigation menu. The **Primary Command Server Configuration** page displays.

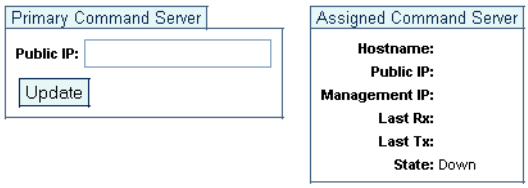


Figure 27. WMI - Assign Primary Command Server

2. Enter the IP address of the primary T7900 server in the **Public IP** field. Click **Update**.

Configuring Media Services

There are two parts for configuring media services on a T7714 unit– media channel configuration and media files configuration. Media channel configuration (see "Media Channels" on page 37) controls the parameter settings for the "capture" and "stream" media paths. Media files configuration (see "Media Files" on page 40) manages how the files are stored on local storage as a result of a capture operation.

Media Channels

Click on **Media Channels** in the **Media Management** menu to configure and manage media channels for a T7714 unit. The **Media Channels** page displays the available channels, their description fields, current audio input port settings, current broadcast standard configuration, and the status of the capture, streaming paths and camera power. Figure 28 on page 38 shows a T7714 unit's **Media Channels** page.

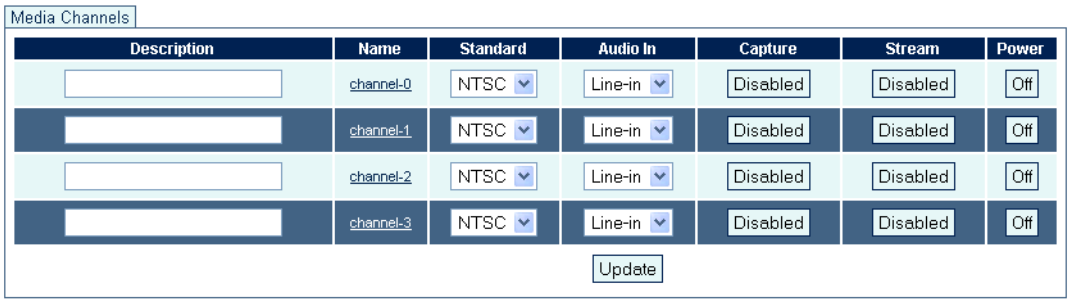


Figure 28. WMI - Media Channels

From this page, you may modify information for the following parameters:

- **Description:** Enter an alphanumeric text string of up to 255 chracters for the channel.
- **Standard:** Select a video standard, NTSC or PAL, from the drop-down menu. NTSC is the standard used for North America and most of South America. PAL is the main video standard used in Europe, Africa, Asia and the Middle East.
- **Audio-In:** Select the audio feed, from the Mic input or Line input, from the drop-down menu.
- **Capture/Stream**: Click on the button in the column to Enable/Disable the media feed for the channel.
- **Power:** Click on the button to turn the camera on or off.

Click **Update** to save your changes for the media channel. Click on the hyperlink of a channel in the **Name** column to view and modify capture/stream settings for a channel (Figure 29).

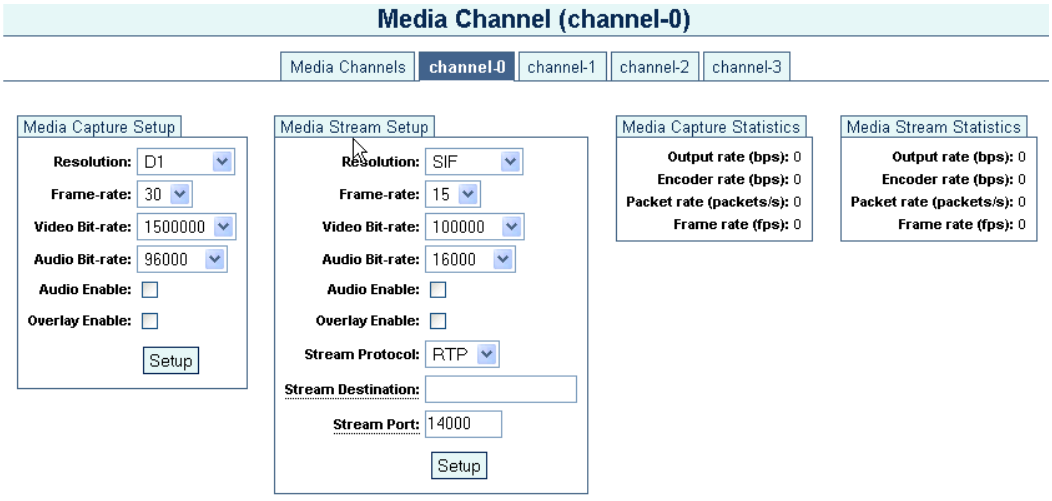


Figure 29. WMI - Capture/Stream Settings

On a media channel's configuration page, you may view statistics and modify settings for the camera's capture and stream capabilities. You must disable the channel first for the new settings to take effect, *unless* you are configuring the video bit-rate and video frame-rate. Your changes for those settings will take effect immediately if you change them while the camera is enabled. Table 5 on page 39 describes capture/stream settings for a channel.

Table 5. Media Channel Capture/Stream Settings

Section	Parameter	Description
Media Capture Setup	Resolution	Set the video resolution. For **NTSC**, select from D1 (720x480), VGA, SIF, QVGA, QSIF, and QQVGA. For **PAL**, select from D1 (720x576), CIF, and QCIF.
	Frame-rate	Set the video frame rate. For **NTSC**, select from the range 3–30. For **PAL**, select from 3–25.
	Video Bit-rate	Set the captured video transmission bit-rate. Select a value from the range 1000000–2500000 bps at 250000 increments.
	Audio Bit-rate	Set the captured audio transmission bit-rate. Select a value from the range 16000–28000 bps at 16000 increments.
	Audio Enable	Check/uncheck to enable/disable captured audio with the captured video.
	Overlay Enable	Check/uncheck to enable/disable metadata overlay along with the captured video.
Media Stream Setup	Resolution	Set the video resolution. **NOTE:** If Media Capture is enabled, you must set this parameter to **SIF**. (See Media Capture description for resolution options).
	Frame-rate	Set the video frame rate.**NOTE:** If Media Capture is enabled, you must set this parameter to **15**. (See Media Capture description for frame-rate options).
	Video Bit-rate	Set the streaming video transmission bit-rate. Select a value from the range 40000–2500000 bps at 10000 increments.
	Audio Bit-rate	Set the streaming audio transmission bit-rate. Select a value from the range 16000–128000 bps at 16000 increments.
	Audio Enable	Check/uncheck to enable/disable streamed audio with the streaming video.
	Overlay Enable	Check/uncheck to enable/disable metadata overlay along with the streaming video.
	Stream Protocol	Set the streaming protocol. Select from RTP or UDP.
	Stream Destination	Enter a valid destination IP address for the streaming media.
	Stream Port	Enter a destination port for the streaming media. Select a value from the range 1025 to 65535.

Click **Setup** to save your changes. They will take effect the next time you enable the camera.

Media Files

Media file configuration allows you to control how the unit saves files on the local storage media. Files can be split based on fixed-size, fixed-duration, or set marks around an hour. This feature allows easier management of the captured content by allowing the file to be stored in pre-determined chunks rather than one big file. You can enable the storage media to overwrite files when the local storage is full.

Stored Video Settings. Click on **Stored Videos** in the **Media Management** menu to configure and manage media files for a T7714 unit. The **Settings** tab automatically displays (Figure 30).

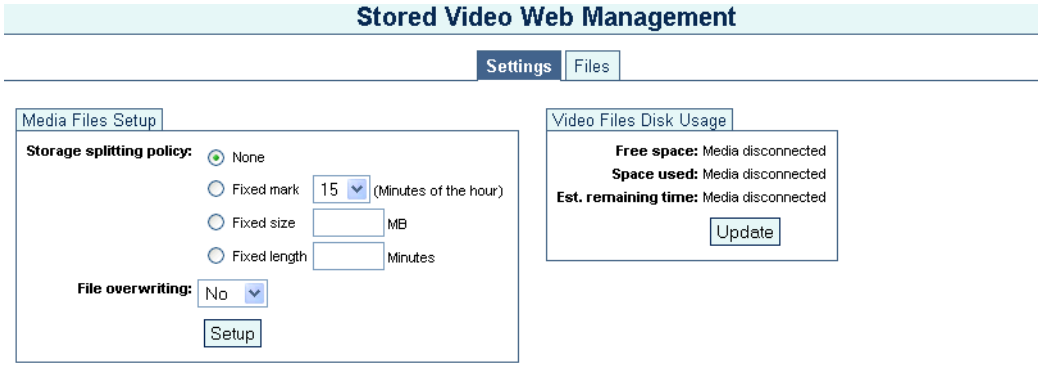


Figure 30. WMI - Stored Video Settings

The **Stored Video Settings** tab allows you to manage settings for files saved on the T7714 unit. You may select a policy that determines the scheme for saving files to the local storage media. Select a radio button from the options: **None**, **Fixed mark** (minutes within an hour), **Fixed size** (file size in MB), or **Fixed length** (time in minutes). Select an option from the drop-down menu if you want the unit to overwrite existing files when the storage disk is full. Click **Setup** to save your changes. Click **Update** in the **Video Files Disk Usage** section to see how much space is available on the local disk.

Stored Video. Click on the **Files** tab on the **Stored Video Web Management** page to view media files for a T7714 unit (Figure 31).

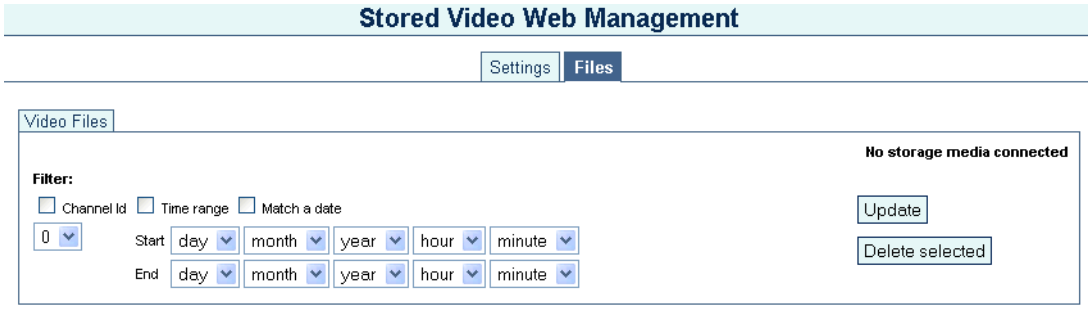


Figure 31. WMI - Stored Video Files

From this page, you may download video files that are stored on the unit. Select the dates that you would like to view stored videos for, and click **Update**. The page will display a list of files for the T7714.

Configuring the GPS Controller

The T7714 features an on-board receiver for acquiring GPS sentences. You can configure the T7714 to listen for GPS sentences that are sent over the network on a specified port. The GPS sentences are stored locally by default but can be relayed to a remote destination. In a typical deployment, the remote destination is set to be the T7900 (primary or secondary) for aggregation and display on GIS applications. For secure encrypted transmission of GPS data, the T7900 management IP address is used as the relay destination. To configure the T7714 GPS controller:

1. Click on **Media Management -> GPS Controller** in the main navigation menu. The **GPS Controller** page displays.

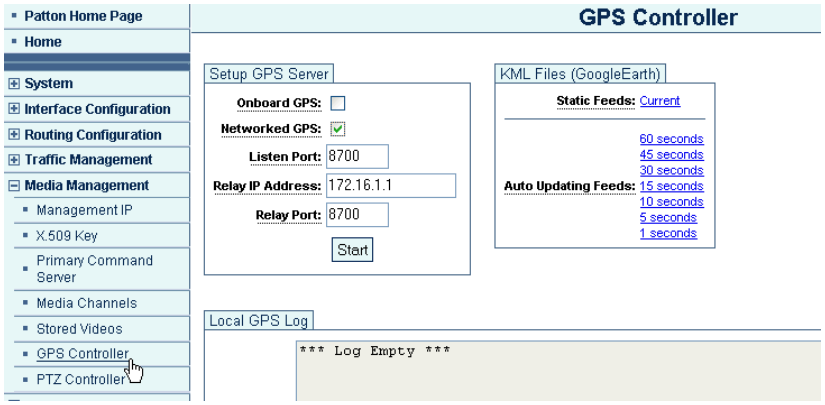


Figure 32. WMI - T7714 GPS Controller

2. In the **Setup GPS Server** section, check the box to enable **Networked GPS**. Enter **8700** for the **Listen Port** and for the **Relay Port**. Enter the management IP address of the primary T7900 server for the **Relay IP Address**. Click **Start**.

Configuring the PTZ Controller

The T7714 features an on-board Pan-Tilt-Zoom (PTZ) controller that allows remote PTZ commands to be relayed to a connected compatible camera. Currently, the T7714 supports PELCO-D- and RVision-compatible cameras that operate at 2400 to 9600 baud rate over the serial interface. You can configure the PTZ controller to support either protocol with selectable baud rate. To configure the T7714 PTZ controller:

1. Click on **Media Management -> PTZ Controller** in the main navigation menu. The **PTZ Controller** page displays.

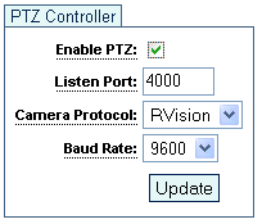


Figure 33. WMI - T7714 PTZ Controller

Check/uncheck the **Enable PTZ** box to enable/disable the connected PTZ controller for a camera. The default **Listen Port** is 4000. Select a protocol for the camera, **RVision** or **Pelco-D**. Select a baud rate from **2400** to **9600**. Click **Update** to save your settings.

Command Line Interface (CLI)

This section describes how to configure basic features for the T7714, such as system settings, the video registry, GPS, and media services, through the CLI. To access a T7714 unit's CLI, connect a PC to the unit's console port. Open a terminal program on the PC and create a connection with the default settings: 19200 baud rate, 8 data bits, no parity, and 1 stop bit.

Refer to the following sections for setting up a T7714 for typical deployment using the CLI:

- "Setting Up Network Interfaces" on page 42
- "Configuring the Video Registry" on page 45
- "Configuring Media Services" on page 45
- "Configuring the GPS Controller" on page 50
- "Configuring the PTZ Controller" on page 50

Setting Up Network Interfaces

In order for the T7714 to operate correctly, you must configure the PPP interface (see "Setting up the PPP interface" on page 42) and an Ethernet interface (see "Setting up the Ethernet interface" on page 43).

Setting up the PPP interface

In a typical deployment, The T7714 is configured to use an internal cellular modem card to connect to the cellular network for Internet connectivity. Cellular modems establish an outgoing public connection to the cellular network using PPP. Complete these steps to set up a network interface for PPP:

1. "Enable the cellular modem"
2. "Create a PPP interface and bind to the cellular modem"
3. "Add the default route over PPP"

Enable the cellular modem. Use the example below to enable the cellular modem:

Table 6. CLI - Enable the cellular modem

```
configure controller cellular-modem
    no shutdown
exit
```

Create a PPP interface and bind to the cellular modem. Use the example below to create a PPP interface and bind it to the cellular modem:

Table 7. CLI - Create PPP interface/bind to cellular modem

```
configure interface ppp 0
    bind cellular-modem
    lcp
      exit
    ipcp
      local ip address accept
      peer ip address accept
      peer accept-dns
      exit
    bcp
      exit
    no shutdown
    exit
  ssl
exit
```

Add the default route over PPP. Use the example below to add a default route to go over the PPP interface:

Table 8. CLI - Add default route over PPP

```
configure route default interface ipcp0 metric 0 tos 0
```

Setting up the Ethernet interface

The T7714 has two physical Ethernet interfaces. You can configure these interfaces to have IP addresses and bind them to a DHCP server to facilitate local access for maintenance and management.

Configure the eth0 interface. Use the example below to configure the Ethernet interface "**eth0**" with an IP address:

Table 9. CLI - Configure eth0 interface

```
configure interface ethernet eth0
    mtu 1500
    enable arp
    enable multicast
    no shutdown
    ip address 192.168.200.10 netmask 255.255.255.0 broadcast 0.0.0.0
exit
```

Configure the DHCP server. Use the example below to enable the DHCP server on the eth0 interface:

Table 10. CLI - Configure the DHCP server

```
configure dhcpd
    iprange 192.168.200.100 192.168.200.200
    subnet 255.255.255.0
    lease 10 0 0 0
    default-router 192.168.200.10
    dns-server 208.67.222.222
    dns-server 208.67.220.220
    bind eth0
exit
```

Setting up firewall profiles

You will need two access control/firewall profiles on the public PPP interface for secure network operation. The first profile provides firewall protection on the ingress direction. The T7714 operates in client mode; therefore, all connections are initiated from the T7714 towards the T7900. Firewall rules reject all connections from the outside to the T7714, with the exception of connections that are part of any communication initiated by the unit. .

The second firewall profile is bound in the egress direction on the PPP interface and protects media content traffic from leaking to the Internet before the secure tunnel is established between the T7714 and T7900.

In most cases, these firewall profiles do not have to be modified. Additional ports in the ingress direction can be opened up for SSH or Web connections if remote access is required.

Configure the ingress firewall profile. Use the example below to create the ingress firewall profile:

Table 11. CLI - Configure the ingress firewall profile

```
configure firewall profile publicin
    policy DROP
    rule allow target accept match-connstate RELATED ESTABLISHED
    bind ipcp0 direction global-ingress
exit
```

Configure the egress firewall profile. Use the example below to create the egress firewall profile:

Table 12. CLI - Configure the egress firewall profile

```
configure firewall profile publicout
    policy ACCEPT
    rule video target drop match-source-ip 192.0.2.16/30
    bind ipcp0 direction global-egress
exit
```

Configuring the Video Registry

When configuring the video-registry, the MVAS assigns a unique management IP in the *172.16.1.0/24* subnet to the T7714. The system creates and configures an SSL key for use with the video-registry system. The T7714 is then configured with the IP address of the primary T7900. Use the example below to configure the video registry for T7714:

Table 13. CLI - Configure the video registry

```
configure video-registry
    management-ip 172.16.1.50
    key remotekey.pem
    primary 209.A.B.C
exit
```

Configuring Media Services

There are two parts for configuring media services on a T7714 unit– media channel configuration and media files configuration. Media channel configuration (see "Managing Media Channels" on page 45) controls the parameter settings for the "capture" and "stream" media paths. Media files configuration (see "Managing Media Files" on page 50) manages how the files are stored on local storage as a result of a capture operation.

Managing Media Channels

Use the example below to configure media channels for a T7714 unit:

Table 14. CLI - Configure media channels

```
configure media channel 0
    broadcast-std ntsc
    audio-port mic-in
    capture
      video frame-rate 30 bit-rate 1500000 resolution D1
      audio bit-rate 96000
      enable overlay
      exit
    stream
      video frame-rate 15 bit-rate 70000 resolution SIF
      audio bit-rate 16000
      network address 224.4.153.50 port 14000 protocol RTP
      enable overlay
      enable audio
      no shutdown
      exit
    no shutdown
exit
```

The broadcast standard configures the system for NTSC or PAL camera format. This information is correlated to the format of the camera connected to the given channel. The system displays a warning message if the camera and selected broacast format are incompatible. You can set the audio input to use the Line-in or Mic-in inputs. Capture and stream subsections configure the video and audio parameters and control whether audio capture feature and overlay feature, which allows GPS information to be displayed over the media content, are enabled. These parameters can be configured independently for either path.

You can stream media channel content to any destination in unicast or multicast. In a typical deployment, it is expected that a number of users will be accessing and viewing the media content at the T7900 site. There may also be a number of remote users accessing the T7900 local subnet via VPN. In order to allow access for all users, Patton recommends using multicast transmission. The T7714 automatically configures and maintains proper multicast routing once the secure encrypted tunnel is established to the T7900.

Each T7714 that is participating in the MSP session must be configured to use a different multicast address in the *224.0.0.0/4* subnet. Also, each media channel should be streaming using a different port within the selected multicast address. The default shipping configuration for Patton T7714 models configures the multicast IP addresses based on the unit's "eth0" MAC address.

You may set up the media channels under different command modes, depending on what feature you want to manage:

- See "Configure mode" on page 46 to set up the video display for a camera
- See "Channel mode" on page 46 configure audio/video settings for a media channel
- See "Stream mode" on page 47 to configure the streaming path of a media channel
- See "Capture mode" on page 48 to configure the capture path of a media channel
- See "Show mode" on page 49 to display configuration settings for a media channel

Configure mode. Configure mode allows you to set up the video display for a remote unit.

Table 15. CLI - T7714 Media Channels - Configuration Mode

Command	Explanation
Trinity# configure media channel <n>	Enter the configuration mode for media channel *<n>*.
Trinity# configure media display-layout <0|1|2|3|quad>	Switch the video display output port on T7714 to channels 0-3, or to quad formwhere all 4 channels are viewed concurrently. (T7714 only).

Channel mode. Channel mode allows you to set up audo/video settings for a media channel.

Table 16. CLI - T7714 Media Channels - Channel Mode

Command	Explanation
Trinity[media(channel-0)]# audio-port <mic-in | line-in>	Configure the unit to capture audio from the micro-phone- or line-in port. Both media paths must be shut-down before this command can take effect.
Trinity[media(channel-0)]# broadcast-std <ntsc | pal>	Configure the unit to capture video in a given stan-dard. Requires a matching camera connected to the input port for this channel. If the camera type does not match the selection, a warning message will dis-play and user confirmation will be required. Both media paths must be shutdown before this command can take effect.
Trinity[media(channel-0)]# [no] shutdown	Shut down both media paths if enabled, and turn off the camera. Use the command **no shutdown** to turn the camera on.

Table 16. CLI - T7714 Media Channels - Channel Mode

Command	Explanation
Trinity[media(channel-0)]# stream <cr>	Enter the stream media path configuration mode for the channel.
Trinity[media(channel-0)]# capture <cr>	Enter the capture media path configuration mode for the channel.
Trinity[media(channel-0)]# description <string>	Enter a description for the media channel.

Stream mode. **Stream mode** allows you to configure the streaming media path of a media channel.

Table 17. CLI - T7714 Media Channels - Stream Mode

Command	Explanation
Trinity [stream(channel-0)]# audio bit-rate <value>	Set the streaming audio transmission bit-rate. Select a value from the range 16000–128000 bps at 16000 increments. This command requires the media path to be shutdown first.
Trinity[stream(channel-0)]# video bit-rate <value>	Set the streaming video transmission bit-rate. Select a value from the range 40000–2500000 bps at 10000 increments. This command can be applied immediately while the media path is streaming.
Trinity[stream(channel-0)]# video frame-rate <value>	Set the video frame rate. For **NTSC**, select from the range 3–30. For **PAL**, select from 3–25. This command can be applied immediately while the media path is streaming. **NOTE:** If Media Capture is enabled, you must set this parameter to **15**.
Trinity[stream(channel-0)]# video resolution <value>	Set the video resolution. For **NTSC**, select from D1 (720x480), VGA, SIF, QVGA, QSIF, and QQVGA. For **PAL**, select from D1 (720x576), CIF, and QCIF. This command can be applied immediately while the media path is streaming. **NOTE:** If Media Capture is enabled, you must set this parameter to **SIF**.
Trinity[stream(channel-0)]# network protocol <RTP | UDP>	Set the streaming protocol. Select from RTP or UDP. This command requires the media path to be shutdown first.
Trinity[stream(channel-0)]# network address <ipaddr>	Enter a valid destination IP address (in quad *A.B.C.D* format) for the streaming media. This command requires the media path to be shutdown first.
Trinity[stream(channel-0)]# network port <value>	Enter a destination port for the streaming media. Select a value from the range 1025 to 65535.This command requires the media path to be shutdown first.

Table 17. CLI - T7714 Media Channels - Stream Mode

Command	Explanation
Trinity[stream(channel-0)]# [no] enable <audio | overlay>	Enable/disable audio and metadata overlay along with the streamed video. Audio and metadata overlay is streamed only if video is enabled with the no shutdown command below. Otherwise, no audio and metadata can be streamed without video. This command can be applied immediately while the media path is streaming.
Trinity[stream(channel-0)]# [no] shutdown	Enable/disable media streaming. Enable audio and overlay if they were enabled using the command above.

Capture mode. **Capture mode** allows you to configure the capture media path of a media channel. Media content is sent to local storage (the hard disk on T7714 models).

Table 18. CLI - T7714 Media Channels - Capture Mode

Command	Explanation
Trinity[capture(channel-0)]# audio bit-rate <value>	Set the captured audio transmission bit-rate. Select a value from the range 16000–28000 bps at 16000 increments. This command requires the media path to be shutdown first.
Trinity[capture(channel-0)]# video bit-rate <value>	Set the captured video transmission bit-rate. Select a value from the range 1000000–2500000 bps at 250000 increments.This command can be applied immediately while the media path is capturing.
Trinity[capture(channel-0)]# video frame-rate <value>	Set the video frame rate. For **NTSC**, select from the range 3–30. For **PAL**, select from 3–25. This command can be applied immediately while the media path is capturing.
Trinity[capture(channel-0)]# video resolution <value>	Set the video resolution. For **NTSC**, select from D1 (720x480), VGA, SIF, QVGA, QSIF, and QQVGA. For **PAL**, select from D1 (720x576), CIF, and QCIF. This command requires the media path to be shutdown first.
Trinity[capture(channel-0)]# [no] enable <audio | overlay>	Enable/disable audio and metadata overlay along with the captured video. Audio and overlay is captured only if video is enabled with the no shutdown command below. Otherwise, no audio and metadata can be captured without video. This command can be applied immediately while the media path is capturing.
Trinity[capture(channel-0)]# [no] shutdown	Enable/disable video capture. Enable audio and overlay if they were enabled using the command above.

Show mode. **Show mode** displays settings for a selected media channel.

Table 19. CLI - T7714 Media Channels - Show Mode

Command	Explanation
Trinity# show media channel <n> status	Display the configuration settings of the selected channel *<n>*. (See Figure 34 on page 49).
Trinity# show media channel <n> statistics	Display the statistics from the selected channel *<n>*. (See Figure 35 on page 49).
Trinity# show media display-layout	Display current layout of the output video port *<n>*. (See Figure 36 on page 49).

```
192.168.2.100[media(channel-0)]# description
<string>     Quoted string
192.168.2.100[media(channel-0)]# description "Front Camera"
192.168.2.100[media(channel-0)]# show media channel 0 status
Media Channel Configuration:
        Description: Front Camera
        Video Source: ntsc
        Capture Options:
                Video: Disabled Audio: Disabled Overlay: Disabled
                Video Resolution: D1 (704x480)
                Video Frame-rate: 25 fps
                Video Bit-rate: 1000000 kbps
                Audio Bit-rate: 128000 kbps
                Audio Port: Mic In
        Streaming Options:
                Video: Disabled Audio: Disabled Overlay: Disabled
                Video Resolution: SIF (352x240)
                Video Frame-rate: 15 fps
                Video Bit-rate: 100000 kbps
                Audio Bit-rate: 32000 kbps
                Audio Port: Mic In
                Stream Destination: 192.168.2.103:20000
                Stream Protocol: RTP
192.168.2.100[media(channel-0)]#
```

Figure 34. CLI - Show media channel configuration

```
192.168.2.100#
192.168.2.100#
192.168.2.100# show media channel 0 statistics
Media Channel Statistics:
        Capture Statistics:
                Output Bit-rate (bps): 0
                Packet/sec (pkt/sec): 0
                Frames/sec (fps): 0
                Encoder rate (bps): 0
        Streaming Statistics:
                Network Bit-rate (bps): 81000
                Packet/sec (pkt/sec): 9
                Frames/sec (fps): 0
                Encoder rate (bps): 84000
192.168.2.100#
```

Figure 35. CLI - Show media channel statistics

```
192.168.2.100#
192.168.2.100#
192.168.2.100# configure media display-layout
0       Set display output to selection
1       Set display output to selection
2       Set display output to selection
3       Set display output to selection
quad    Set display output to selection
192.168.2.100# configure media display-layout quad
<cr>
192.168.2.100# configure media display-layout quad
192.168.2.100# show media display-layout
Video display output:
       Layout:         quad
       Motion Detection:       No
192.168.2.100#
```

Figure 36. CLI - Show media display layout configuration

Managing Media Files

Media file configuration allows you to control how the unit saves files on the local storage media. Files can be split based on fixed-size, fixed-duration, or set marks around an hour. This feature allows easier management of the captured content by allowing the file to be stored in pre-determined chunks rather than one big file. You can enable the storage media to overwrite files when the local storage is full.

Use the example below to configure media file settings for a T7714 unit:

Table 20. CLI - Configure media file settings

```
configure media files
    storage fixed-length 30
    enable overwrite
exit
```

Configuring the GPS Controller

The T7714 features an on-board receiver for acquiring GPS sentences. You can configure the T7714 to listen for GPS sentences that are sent over the network on a specified port. The GPS sentences are stored locally by default but can be relayed to a remote destination. In a typical deployment, the remote destination is set to be the T7900 (primary or secondary) for aggregation and display on GIS applications. For secure encrypted transmission of GPS data, the T7900 management IP address is used as the relay destination.

Use the example below to configure the GPS controller for a T7714 unit:

Table 21. CLI - Configure the GPS controller

```
configure controller gps networked
    listen 8700
    no shutdown
exit
configure controller gps on-board
    no shutdown
exit
configure controller gps relay 172.16.1.1 8700
```

Configuring the PTZ Controller

The T7714 features an on-board Pan-Tilt-Zoom (PTZ) controller that allows remote PTZ commands to be relayed to a connected compatible camera. Currently, the T7714 supports PELCO-D- and RVision-compatible cameras that operate at 2400 to 9600 baud rate over the serial interface. You can configure the PTZ controller to support either protocol with selectable baud rate.

Use the example below to configure the PTZ controller for a T7714 unit:

Table 22. CLI - Configure the PTZ controller

```
configure controller ptz
    activate listen-port 4000 RVision 9600
    no shutdown
exit
```

Chapter 5 Contacting Patton for assistance

Chapter contents

Introduction 52
Contact information 52
Patton support headquarters in the USA 52
Alternate Patton support for Europe, Middle East, and Africa (EMEA) 52
Warranty Service and Returned Merchandise Authorizations (RMAs) 52
Warranty coverage 52
Out-of-warranty service 53
Returns for credit 53
Return for credit policy 53
RMA numbers 53
Shipping instructions 53

Introduction

This chapter contains the following information:

- "Contact information"—describes how to contact Patton technical support for assistance.
- "Warranty Service and Returned Merchandise Authorizations (RMAs)"—contains information about the warranty and obtaining a return merchandise authorization (RMA).

Contact information

Patton Electronics offers a wide array of free technical services. If you have questions about any of our other products we recommend you begin your search for answers by using our technical knowledge base. Here, we have gathered together many of the more commonly asked questions and compiled them into a searchable database to help you quickly solve your problems.

Patton support headquarters in the USA

- Online support: available at **www.patton.com**
- E-mail support: e-mail sent to **support@patton.com** will be answered within 1 business day
- Telephone support: standard telephone support is available five days a week—from **8:00 am** to **5:00 pm EST** (**1300** to **2200 UTC/GMT**)—by calling **+1 (301) 975-1007**
- Fax: **+1 (253) 663-5693**

Alternate Patton support for Europe, Middle East, and Africa (EMEA)

- Online support: available at **www.patton-inalp.com**
- E-mail support: e-mail sent to **support@patton-inalp.com** will be answered within 1 business day
- Telephone support: standard telephone support is available five days a week—from **8:00 am** to **5:00 pm CET** (**0900** to **1800 UTC/GMT**)—by calling **+41 (0)31 985 25 55**
- Fax: **+41 (0)31 985 25 26**

Warranty Service and Returned Merchandise Authorizations (RMAs)

Patton Electronics is an ISO-9001 certified manufacturer and our products are carefully tested before shipment. All of our products are backed by a comprehensive warranty program.

> **Note** If you purchased your equipment from a Patton Electronics reseller, ask your reseller how you should proceed with warranty service. It is often more convenient for you to work with your local reseller to obtain a replacement. Patton services our products no matter how you acquired them.

Warranty coverage

Our products are under warranty to be free from defects, and we will, at our option, repair or replace the product should it fail within one year from the first date of shipment. Our warranty is limited to defects in workmanship or materials, and does not cover customer damage, lightning or power surge damage, abuse, or unauthorized modification.

Out-of-warranty service

Patton services what we sell, no matter how you acquired it, including malfunctioning products that are no longer under warranty. Our products have a flat fee for repairs. Units damaged by lightning or other catastrophes may require replacement.

Returns for credit

Customer satisfaction is important to us, therefore any product may be returned with authorization within 30 days from the shipment date for a full credit of the purchase price. If you have ordered the wrong equipment or you are dissatisfied in any way, please contact us to request an RMA number to accept your return. Patton is not responsible for equipment returned without a Return Authorization.

Return for credit policy

- Less than 30 days: No Charge. Your credit will be issued upon receipt and inspection of the equipment.
- 30 to 60 days: We will add a 20% restocking charge (crediting your account with 80% of the purchase price).
- Over 60 days: Products will be accepted for repairs only.

RMA numbers

RMA numbers are required for all product returns. You can obtain an RMA by doing one of the following:

- Completing a request on the RMA Request page in the *Support* section at **www.patton.com**
- By calling **+1 (301) 975-1007** and speaking to a Technical Support Engineer
- By sending an e-mail to **returns@patton.com**

All returned units must have the RMA number clearly visible on the outside of the shipping container. Please use the original packing material that the device came in or pack the unit securely to avoid damage during shipping.

Shipping instructions

The RMA number should be clearly visible on the address label. Our shipping address is as follows:

Patton Electronics Company
RMA#: xxxx
7622 Rickenbacker Dr.
Gaithersburg, MD 20879-4773 USA

Patton will ship the equipment back to you in the same manner you ship it to us. Patton will pay the return shipping costs.

Appendix A **Specifications**

Chapter contents

Video Inputs....55
Audio Input....55
Audio Output....55
Video Ingest Resolution & Processing....55
Digital Video Recorder (DVR)....55
Streaming....55
Cellular/Wireless Uplink & GPS....55
Data Connections & Camera Control....56
Security and Encryption....56
Networking....56
Management....57
Dimensions....57
Weight....57
Power....57
Environment....57

Video Inputs

Accepts up to 4 composite NTSC-M or PAL format

Standard definition 525 line, 29.97 fps/PAL definition 625 lines, 25 fps

Female BNC connectors, one per input

Audio Input

Four mono line level audio inputs

Female 75-ohm BNC

Sampling from 8 to 96 kHz

Single electret microphone input on 3.5 mm jack

Audio Output

Single mono line level audio output on female BNC

Single headphone output on 3.5 mm jack

Video Ingest Resolution & Processing

Records video at D1 (720x480) size, 30 frames-per-second (fps) while simultaneously streaming at SIF (352x240) size, 15 fps. When recording is disabled, video content can be streamed at a max resolution of D1 (720x480) size, 25 fps

H.264 encoder supports D1 (720x480 or 720x480), VGA (640x480), SIF (352x240), QVGA (320x240), QSIF (172x128), & QQVGA (160x128) video resolutions at 3~30 fps

Digital Video Recorder (DVR)

Record any source

Sources independently recorded with unique time-stamped file names

Field removable & lockable media drive bay

Configurable alerts & management for media full & overwrite behavior

Streaming

Stream & source

Sources independently streamed with unique source address

Different resolution than recorded

Cellular/Wireless Uplink & GPS

Integrated wireless options with 1xRTT, EVDO Rev. 0 and Rev. A, and HSPA using internal PCI Express form factor internal cellular modems

Full GPS 12-channel support

Real-time clock sync.

NMEA 0183 data recorded & streamed automatically

Separate TNC for primary uplink, diversity, & GPS antenna inputs

Data Connections & Camera Control

Two 10/100/1000 local Ethernet ports

RS-232 Console port

Pan/Tilt/Zoom (PTZ) control supporting two-wire R485

Supports Rvision and Pelco D PTZ protocols on DB-9 interface

Security and Encryption

Private and encrypted tunnel between unit & central site

All remote unit data via tunnel & encrypted with all data encapsulated within the tunnel

Standard AES encryption

Remote device firewalled to prevent unauthorized access & denial-of-service attacks

Government-use and commercial-use versions

Networking

Patton's TrinityAE™ Service Set

Full TCP/IP networking

Software upgrades

Import/Export Config

CLI Framework /WMI Framework

Telnet/SSH

HTTP Server

System Monitor

Platform Manager

QoS

SSL

ACL/Firewall

Data & networking encryption

Management

Web-based GUI

CLI

Telnet & HTTP access

TFTP configuration up- & download

TFTP firmware upgrade

SNMPv1 agent, MIB II & enterprise MIB

Built-in diagnostic tools

Auto-provisioning—configuration & firmware

System status with 4 LEDs

Patton's Trinity™ CORBA IDL set

Dimensions

T7714 Unit: 11.4L x 10.0W x 5.9D in. (29.0L x 25.4W x 15.0D cm)

T7714 Unit in Dock: 17.3L x 12.3W x 5.9D in. (43.9L x 31.2W x 15.0D cm)

Weight

T7714 Unit: 7.6 lbs (3.4 kg)

T7714 Dock: 15.4 lbs (7.0 kg)

T7714 Unit in Dock: 23 lbs (10.4 kg)

Power

Input: 13.1VDC nominal Negative ground system

Consumption: 120W

Integrated ignition/accessory sense and activation with sleep/wake mode

Graceful shutdown on power-loss

Environment

Operating Temp: 0–85°C

Humidity: 5 to 95% , non-condensing

Appendix B **Port pin-outs**

Chapter contents

Introduction 59
Console port 59
Ethernet port 59
External SATA Connector 60
PTZ Connector 60
OBD II Connector 61
USB Type A Connector 61

Introduction

This section provides pin-out information for ports on the Visuality™ Model T7714.

Console port

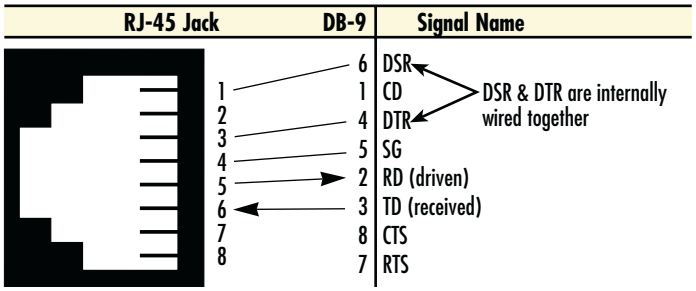


Figure 37. EIA-561 (RJ-45 8-pin) port

Note Pins not listed are not used.

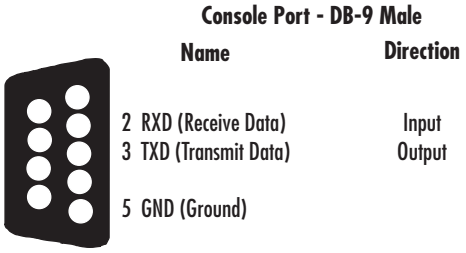


Figure 38. EIA-561 (DB-9) port

Ethernet port

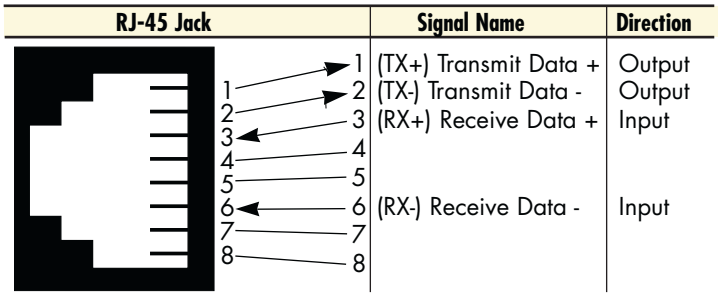
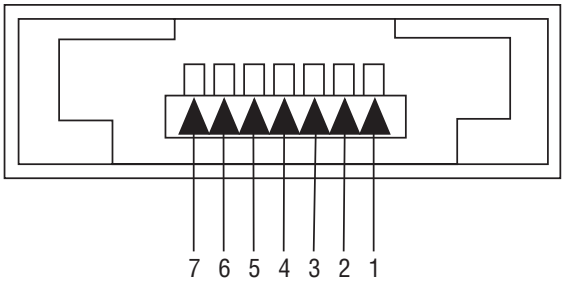


Figure 39. Ethernet port pin-out

Note Pins not listed are not used.

External SATA Connector



Pin Number	Name	Direction
1	GND (Ground)	
2	TX+ (Transmit Data +)	Output
3	TX- (Transmit Data -)	Output
4	GND (Ground)	
5	RX- (Receive Data -)	Input
6	RX+ (Receive Data +)	Input
7	GND (Ground)	

Figure 40. SATA connector pin-out

PTZ Connector

PTZ Connector - DB-9

Direction	Name		Name	Direction
Input	RX- (Receive Data -) 6		2 TX+ (Transmit Data +)	Output
			3 TX- (Transmit Data -)	Output
			5 RX+ (Receive Data +)	Input

Figure 41. PTZ Connector (DB-9)

OBD II Connector

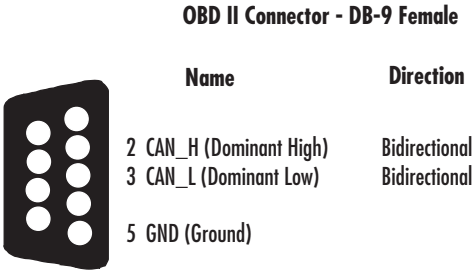
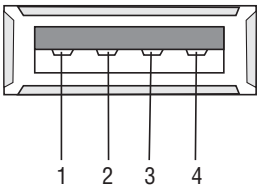


Figure 42. OBD II Connector (DB-9)

USB Type A Connector



Pin Number	Name	Direction
1	VBUS	
2	DM (Data -)	Bidirectional
3	DP (Data +)	Bidirectional
4	GND (Ground)	

Figure 43. USB Type A Connector

Appendix C **T7714 factory configuration**

Chapter contents

Introduction 63

Introduction

This section shows the factory configuration settings for Model T7714.

```
#-------------------------------------------------------------------#
#                                                                   #
#                  Patton Electronics Company                       #
#                           T7714                                   #
#                 Generated configuration file                      #
#                                                                   #
#-------------------------------------------------------------------#
configure
  logging local syslog priority warn lines 200
  username admin password 5 96e51e81f818683dbabba46226f898f7 privilege superuser
  username monitor password 5 916560a53d7f24229a3262c3e73edf72 privilege monitor
  enable wmi port 80
  enable ssh-server port 22
  system
    fan speed auto
    fan mode normal
    fan temp-threshold high 60
    fan temp-threshold medium 40
    fan temp-threshold low 20
    exit
  controller gps networked
    listen 8700
    exit
  controller gps on-board
    no shutdown
    exit
  controller ptz
    activate listen-port 4000 RVision 9600
    exit
  controller cellular-modem
    no shutdown
    exit
  interface ethernet eth0
    mtu 1500
    enable arp
    enable multicast
    no shutdown
    ip address 192.168.1.10 netmask 255.255.255.0 broadcast 0.0.0.0
    ip address 192.168.200.10 netmask 255.255.255.0 broadcast 0.0.0.0
    exit
  interface ethernet eth1
    mtu 1500
    enable arp
    enable multicast
    no shutdown
    exit
  interface ppp 0
    bind cellular-modem
    lcp
      exit
    ipcp
      local ip address accept
```

```
    peer ip address accept
    peer accept-dns
    exit
  bcp
    exit
  no shutdown
  exit
ssl
  exit
route default interface ipcp0 metric 0 tos 0
ntp
  exit
firewall profile publicin
  policy DROP
  rule allow target accept match-connstate RELATED ESTABLISHED
  bind ipcp0 direction global-ingress
  exit
firewall profile publicout
  policy ACCEPT
  rule video target drop match-source-ip 192.0.2.16/30
  bind ipcp0 direction global-egress
  exit
dhcpd
  exit
pppauth
  nas-id NASID
  authentication none
  exit
ipsec
  exit
dns-server
  no shutdown
  exit
napt
  exit
fwrd
  exit
conntrack
  no enable ftp
  exit
media channel 0
  broadcast-std ntsc
  audio-port mic-in
  capture
    video frame-rate 30 bit-rate 1500000 resolution D1
    audio bit-rate 96000
    enable overlay
    exit
  stream
    video frame-rate 15 bit-rate 70000 resolution SIF
    audio bit-rate 16000
    enable overlay
    enable audio
    exit
  no shutdown
```

```
  exit
media channel 1
  broadcast-std ntsc
  audio-port line-in
  capture
    video frame-rate 30 bit-rate 1500000 resolution D1
    audio bit-rate 96000
    enable overlay
    exit
  stream
    video frame-rate 15 bit-rate 70000 resolution SIF
    audio bit-rate 16000
    enable overlay
    exit
  no shutdown
  exit
media channel 2
  broadcast-std ntsc
  audio-port line-in
  capture
    video frame-rate 30 bit-rate 1500000 resolution D1
    audio bit-rate 96000
    enable overlay
    exit
  stream
    video frame-rate 15 bit-rate 70000 resolution SIF
    audio bit-rate 16000
    enable overlay
    exit
  no shutdown
  exit
media channel 3
  broadcast-std ntsc
  audio-port line-in
  capture
    video frame-rate 30 bit-rate 1500000 resolution D1
    audio bit-rate 96000
    enable overlay
    exit
  stream
    video frame-rate 15 bit-rate 70000 resolution SIF
    audio bit-rate 16000
    enable overlay
    exit
  no shutdown
  exit
media files
  storage fixed-length 30
  enable overwrite
  exit
media display-layout quad
video-registry
   exit
exit
```